CHEMICAL MARKETS

VOL. XXVI MAY, 1930 No. 5.

Clever --- Like a Donkey

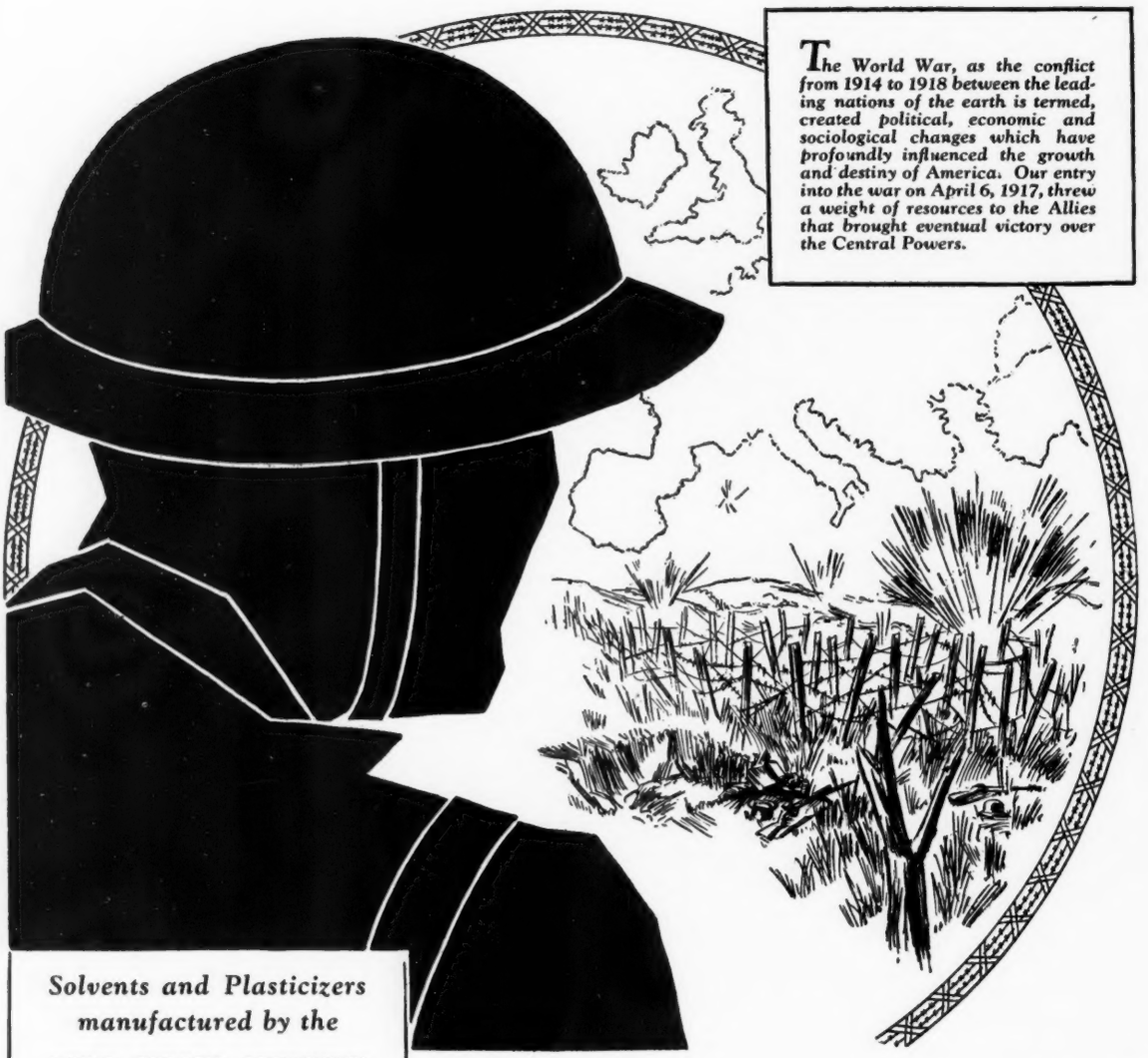
MAKING customers of one's friends is one of the oldest and most obvious selling methods. In the old days it was probably the chief and commonest sales appeal. To-day even our soulless corporations have their friends, and the modern sales engineer, although he sniffs a bit contemptuously at the cigars and racy stories of his predecessor of the Victorian Era, nevertheless depends largely on what he is now pleased to call "personal contacts."

BUT making customers of customers is a more modern development. Although business upon a reciprocity basis is certainly not new, it is, however, beginning to assume very large proportions in chemical fields.

DURING the direful period just at the close of the war, when over-production and tumbling prices made competition too keen, many shrewd sales-managers borrowed their purchasing agents' records as a prospect list. Under such trade conditions, you-buy-from-me because I-buy-from-you, was a telling argument. During the past couple of years the increasing number of mergers among companies in widely different branches of the chemical industry has created many such preferred customers and has, at the same time, strengthened a co-operative feeling among the small companies not in these larger consolidations. As a result reciprocity business has grown by leaps and bounds, till it reaches a volume that exercises a grave weight upon the entire chemical marketing situation.

LIKE all sorts of "friendship business," reciprocity promotes a false feeling of security. Nothing is more fickle than the contract secured upon any but the sound basis of cold-blooded business reasoning. Any preferential order carries with it unpleasant implications. Special conditions; special terms; special packing and handling, and even special prices come along in the train of reciprocity. Furthermore, a company which vigorously adopts you-and-me as a sales argument—and there are several doing so to-day—builds up for itself ill-will among its competitors and other customers. In the case of the very large mergers this ill-will sometimes even becomes acute enough to be an actual liability in that it promotes solidity of competition and creates an unnatural sales resistance. Carried to an extreme this sort of sentiment popularized will bring active opposition and legal restriction upon the big companies.

WHAT appears to be a strong weapon, therefore, turns out to be a boomerang. Contracts tied up through reciprocity unloose a pack of troubles to plague a sales-manager foolish enough to think that "tit-for-tat" is the first law of business.



The World War, as the conflict from 1914 to 1918 between the leading nations of the earth is termed, created political, economic and sociological changes which have profoundly influenced the growth and destiny of America. Our entry into the war on April 6, 1917, threw a weight of resources to the Allies that brought eventual victory over the Central Powers.

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This is number 17 of a series depicting historical periods in the development of America

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Who Is Our Leading Chemical Industrialist?

Perhaps in no other field is scientific achievement publicly acknowledged so handsomely as in chemistry. Chemical technologists have had no grounds for complaint on this score. The various scientific societies and technical organizations have been generous in the creation of suitable awards for technical services and scientific achievement; but there has been a conspicuous failure to recognize the outstanding achievements of industrialists in chemical fields.

The scientific and technical advances of the laboratory must be crystallized in practical form by the plant and made commercially possible by the business office, if any real benefits are to be derived. The industrialist not only makes research possible, but he also gives it human values. The efforts of the executive, no less than those of the chemist and engineer, have kept the chemical industry well in the van of industrial progress, and remembering the basic importance of chemicals to every industry, our chemical leaders make valuable contributions to the economic development of the entire nation. Why, then, should not the industrialist's work receive the same public recognition as does the work of the technologist?

This question arose at a recent meeting of our Consulting Board of Editors, out of the discussion of suitable ways and means for celebrating our fifteenth birthday, which comes jointly this month with the tenth year of our present publisher's ownership. The usual methods by which industrial and trade publications celebrate anniversaries at the expense of their advertisers were discussed and discarded. Then the suggestion was made that CHEMICAL MARKETS might best commemorate the occasion by creating a suitable award to recognize the contribution which the executive makes to the chemical and allied industries. The present lack of any such award for industrialists might very appropriately be filled by a medal offered by the business magazine of the industry.

The method of selecting the candidate for this honor presented unusual difficulties. What committee or organization could qualify for the task of fairly appraising the value of executive services to the entire industry? A suffrage of his peers and competitors seems not only the fairest method, but also the one best representing the spirit of the award—a public recognition by the chemical industry as a whole of its outstanding industrial leaders.

Within a few days, therefore, you will receive an invitation to nominate three men for a gold medal to be awarded for "distinguished economic service."

Hurts Rather Than Helps

Dragging the National Oil & Supply Company of Newark into their charges of a widespread plot for the conversion of industrial alcohol, the Federal prohibition authorities have made a grave tactical blunder. If there is any firm in the metropolitan district which emulates Caesar's wife, it is this company, and the charges of complicity brought against Curtis R. Burnett in such a matter would be ludicrous were it not a serious matter to involve such a good name. Throughout a wide chemical circle in the metropolitan area, Mr. Burnett's reputation for scrupulously righteous fair-dealings is fortunately unimpeachable. He is one of the outstanding "strong men" in the chemical distribution field, and all who have had contacts with him know that his integrity and character cannot be questioned. No matter how gracefully the Federal authorities may withdraw from this unpleasant situation of their own creation, it leaves a bad taste in the mouth. Such high-handed and unwarranted procedure hurts rather than helps the present law and its enforcement.

Shelf Goods

Out of a grievous over-production of both fertilizers and insecticides has sprung a luxuriant crop of marketing evils which have made the way of the manufacturer hard. Unnatural differences in production costs, especially in overhead, between the larger and the smaller manufacturers have multiplied these difficulties. Season after season cut prices have ruled—or one might better say misruled—the market situation, and a succession of remedies, ranging all the way from cut-throat retaliation to a code of ethics drawn up with the assistance of the Government and sworn to on a stack of Bibles, have been attempted. All have rather signally failed, and the season now just closing has been more than usually disastrous.

Failure of all of these palliative remedies has been due to their failure to reach the infection. This is, of course, primarily over-production, but this surplus capacity, aggravated by a perfectly natural and universal unwillingness to give up tonnage, has incited a secondary

infection namely, the complete demoralization of the distribution system for fertilizers and insecticides.

Barring a number of first-class funerals and marriages, which would naturally reduce the total production, only a complete rehabilitation of the merchandising system of these industries could, as we have pointed out almost year after year, effect a lasting cure. These agricultural chemicals are consumer goods which especially in the case of fertilizers, often differ markedly in their composition and value. They should be sold as consumer goods upon the basis of a branded material on which the manufacturer places a retail price. They should be sold through regular trade channels, subject to known discounts for jobbing and retailing quantities.

It is extremely interesting, therefore, to us as a friendly, but disinterested observer, to note how in desperation the manufacturers of fertilizers and insecticides are turning to packaged shelf goods. The despised garden trade has proved the one bright spot in the marketing situation this year. Trade marked goods such as Vigoro, Loma, Nitra Phoska and the Anglo-Chilean Brand of nitrate have all of them hung up new sales records. Naturally enough astute sales managers are carrying over these ideas into the bulk goods field, and we see a great revival in interest in company brand and special formulas. With this there should develop a growing disinclination to trade through unorthodox channels, such as the farmer, agent, and the co-operative. It would seem at last that these industries are going to profit by that exhaustive survey of farmers' buying habits, published a year ago, which showed that the local dealer controlled, in three out of four cases, not only the quantity but also the formula and the brand which his customers used.

Quotation Marks

The cotton textile industry has usually been considered as involving only a mechanical conversion of cotton fibres from a loose form to that of a thread to be woven into fabric. The time has now come, however, for the cotton textile industry to realize that cotton is one of the purest forms of cellulose and to consider it as a chemical raw material as well as a mechanical one. To be sure, a start has been made by the rayon industry but there are still many other possibilities which the cotton industry could study to its own advantage. Progress in cellulose chemistry should be one of the greatest interests of the cotton textile industry.—*Cellulose.*

In this process of "rationalizing" research, we must not lose sight of the fact that research, as its very name implies, is essentially an expedition into an unknown field. Neither its results nor its costs can be predicted with exactness. However, with intelligent planning, with a clear vision of both the immediate and the long range objectives, with proper personnel and direction, research will ultimately bring rich rewards to any industry.—*Theodore Swann.*

Certainly there is cause for congratulation in the preliminary report of the United States Tariff Commission covering the Census of Dyes for the year 1929. An industry which less than two decades ago was struggling against powerful and seemingly unrelentless foreign competition has gradually evolved into a conspicuously successful world factor.—*American Dyestuff Reporter.*

The world-wide agricultural crisis coupled with considerable expansion in the capacity of nitrogen production, necessitates mutual forbearance on the part of producers if production is to be brought into harmony with demand.—*Lord Melchett.*

In the long run, I have never had any lasting regrets over the business I lost because I would not make a concession. But sooner or later, I have always been sorry that I took the business on which I made a concession.—*A. H. Deute.*

Profits do not lie in a cheapening of your product, but in an improvement of your method of making that product.—*Business Chemistry.*

Fifteen Years Ago

(From our issues of May, 1915.)

Benzol sold for $1.25 per gallon and American steel companies were making preparations to produce this material from their coke ovens.

Phenol sold for $1.30 @ $1.50 per pound and it was reported that several American concerns were preparing to manufacture this product.

Davison Chemical Co. secured contract from E. I. du Pont de Nemours & Co., Inc., to supply the latter with $1,000,000 worth of sulfuric acid.

Grasselli Chemical Co. planned construction of additions to New Castle, Pa., plant, which were to cost $200,000 and double the plant capacity.

Nichols Copper Co. appointed General Chemical Co. as sole United States selling agent for copper sulfate.

John D. Lewis, organizer of the firm bearing his name in Providence, died May 20.

Innis, Speiden & Co. opened new offices in Cleveland with C. R. Sargent in charge.

1940

1930

1920

By Williams Haynes

TEN years ago there was no Volstead Act and U. S. P. alcohol was selling at $6.75 a gallon (tax, $4.20) and denatured at $1.12. Just ten years ago the Longworth Bill, proposing a virtual embargo on German dyes was defeated, thanks chiefly to the efforts of Senator Moses.

In May 1920, The Barrett Company began building "40 Rector Street"; the Mathieson Alkali Works entered suit against Arnold Hoffman; John F. Queeny bought the Southern Hotel in St. Louis and his company acquired half interest in the Graesser Works in Wales; Elon H. Hooker announced his candidacy for Governor of New York; Walter S. Landis was elected President of the Electrochemical Society; and the British-American Chemical Works plant was shut down by a "nuisance injunction" by the town of Ridgefield Park, N. J.

Then liquid chlorine sold at 9c and sulfur at $25.00. At that time the stock ticker recorded Butterworth Judson, 33; Texas Gulf, 15¼; and General Chemical, 155.

On May 18, 1920, a Committee of the House presented a preliminary report on Muscle Shoals almost the very day that the British Government sold their nitrate plant at Billingham to the Brunner Mond Co.

A Double Anniversary

Such random bits of chemical news bring home sharply the tremendous changes of the past decade. During these ten years we have seen the entire commercial development of the lacquer and rayon industries, of the radio and the plane, and of household refrigeration—each and every one of which has deeply affected the chemical industry. In the same short period we have watched the commercial application of nitrogen from the air, with its accompanying radical changes in ammonia and nitric acid production. Synthetic methanol, synthetic acetic acid, and now synthetic ethyl alcohol are all products of the past decade. In the thick of such dramatic developments time passes quickly and it is hard to realize that May 1, 1920, I first became the publisher of CHEMICAL MARKETS. *Drug & Chemical Markets* (as it was then) had been started five years before that time by my father, so that we are now celebrating a double anniversary.

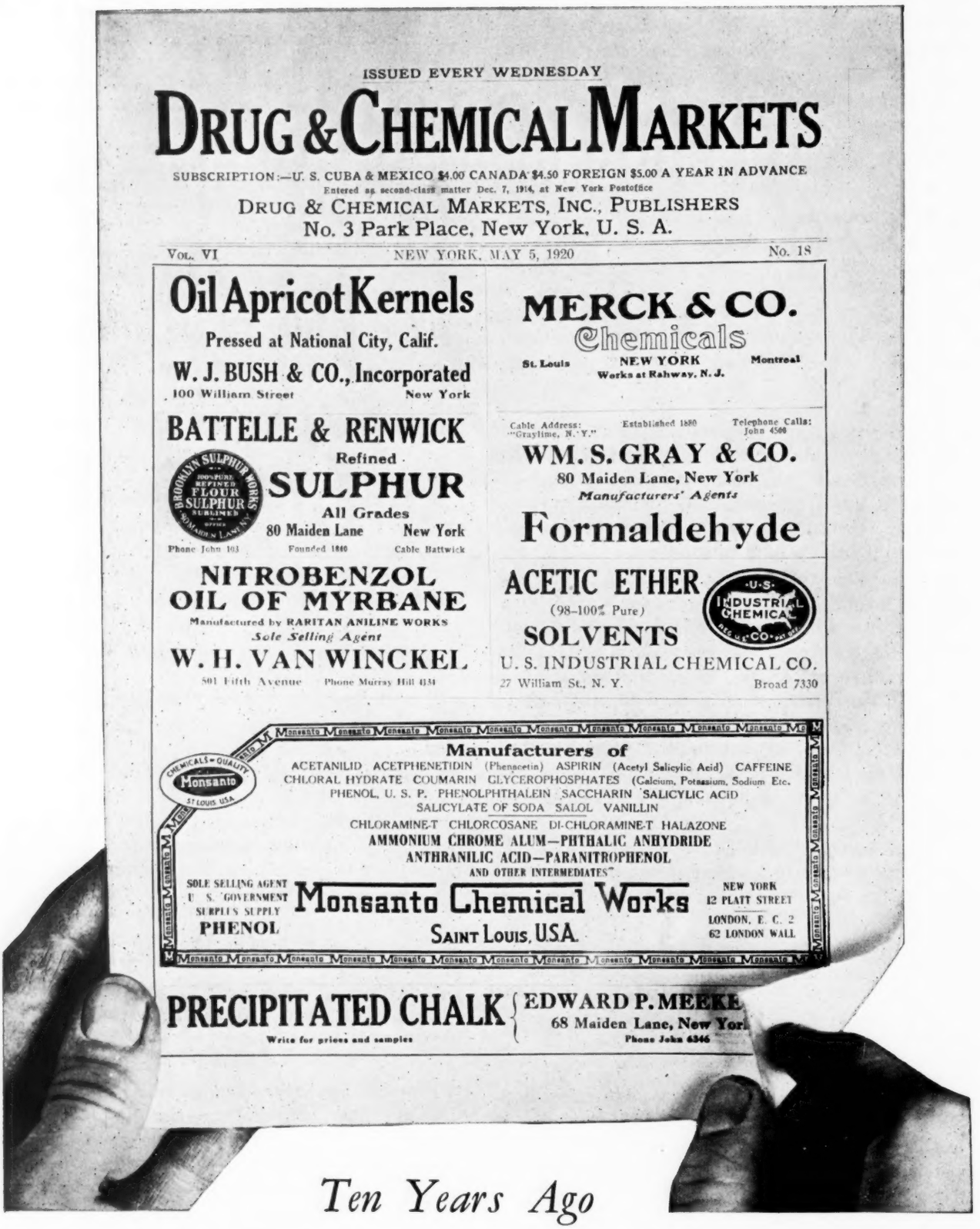
Such an occasion is commonly the excuse for a special issue of a publication. No special number seems to me to serve any very useful purpose—except as a sort of benefit performance for the publisher at the expense of his advertisers—and of all the Anniversary Issue would seem to have the least justification.

Nevertheless, we want to celebrate this anniversary of ours. It is fitting that we should. The ten years just past are a highly significant and distinctly marked era in the industry we serve. It is an epoch that, considered either economically or technically, has definitely passed into history. During this period CHEMICAL MARKETS has grown from a self-covered pamphlet-like, weekly price and news reporter of fifty-two pages (nineteen and a quarter of which were advertising), and we feel that we may be justly proud of our accomplishment. We intend therefore, to celebrate our birthday, and we shall invite our friends to celebrate with us, not as hosts, but as our guests.

Twenty-six Ten Year Advertisers

The sale of advertising supplies the sinews of modern publishing, and we should be ungrateful indeed if we did not recognize in some way our old and faithful customers. Throughout the past ten years twenty-six companies have consistently bought space in our advertising pages. They are:

The Barrett Company
Church & Dwight, Inc.
Charles Cooper & Company
The Dow Chemical Company
E. I. du Pont de Nemours & Company, Inc.
General Chemical Company



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No. 3 Park Place, New York, U. S. A.

VOL. VI NEW YORK, MAY 5, 1920 No. 18

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Ten Years Ago

Our first issue after Williams Haynes became publisher, May, 1920—54 pages: 19¼ of them advertising. Other CHEMICAL MARKETS *"firsts"—first paper to publish quotations on chemical stocks and bonds: first to arrange its price-list in straight alphabetical order, with "quantity, container, and position" data: first to use graphic charts and average-index figures to visualize trend of chemical prices: first to print regularly "back prices" for current reference: first to have a "roto section" as a regular feature: first, and as yet the only, industrial paper to devote itself exclusively to the field of chemicals considered from the business point of view of the executive.*

General Dyestuff Corporation
(H. A. Metz & Co.)
The Grasselli Chemical Company
Wm. S. Gray & Company
R. W. Greeff & Company, Inc.
Innis, Speiden & Company
The Kalbfleisch Corporation
Mallinckrodt Chemical Works
The Mathieson Alkali Works (Inc.)
Merck & Company, Inc.
Monsanto Chemical Works
National Aniline & Chemical Company, Inc.
The New York Quinine and Chemical Works
Newport Chemical Works
Nichols Copper Company
The Roessler & Hasslacher Chemical Co.
The Selden Company
(Walker Chemical Co.)
Solvay Sales Corporation
U. S. Industrial Alcohol Company
Victor Chemical Works
The Warner Chemical Company

These companies represent a very important branch of the industry, and we propose during the next twelve months to publish a series of articles which shall trace the development of American chemical manufacture as exemplified by the histories of these companies. In this way we can present to our readers an industrial survey of fascinating, personal interest; a resumé of real value, since the past decade has laid the foundations of what promises to be the even more spectacular developments of 1930-40.

An Award for Our Leading Chemical Industrialist

Our readers are so numerous, so scattered, that a "birthday party" for them is impractical. We are, however, constantly impressed with the important contributions which they, the chemical executives in office and plant, are rendering to the upbuilding of the industry of which we are all a part. Accordingly we shall invite them all to elect one to receive a fitting award for these services.

Within a few days every subscriber to CHEMICAL MARKETS will receive a ballot upon which he may nominate the three men, active to-day in administrative, production, or sales work, who in his opinion have done the most towards the upbuilding of the business of chemical manufacture in the United States. Later the five executives receiving the greatest number of nominations will be submitted to all subscribers for a secret ballot, and the one receiving the highest vote will be awarded a gold medal specially designed "in recognition of distinguished economic services to the American Chemical Industry."

The Industry's Bookshelf

Soviet Economic Development and American Business, by Saul G. Bron, 147 pages, $1.50, published by Horace Liveright, N. Y.

This book is supplied with a great deal of statistical material on Soviet economic developments and Soviet-American trade and also contains lists of technical assistance contracts with American firms and openings for foreign concessions in the Soviet Union.

Handbook of Chemistry and Physics, by Charles D. Hodgman and Norman A. Lange, 1,386 pages, $5.00, published by Chemical Rubber Pub. Co., Cleveland, O.

This fourteenth edition contains much new material not previously included, including a table giving the physical and chemical constants of resins, oleo resins, and gum resin.

Soviet Russia—A Living Record and A History, by William H. Chamberlin, 453 pages, $5.00, published by Little Brown & Co., Boston, Mass.

An attempt to combine an impartial analysis of what has happened in Russia with an attitude of open-minded curiosity as to what may lie in the future.

Secular Movements in Production and Prices, by Simon S. Kuznets, 536 pages, $3.50, published by Houghton, Mifflin & Co., Boston, Mass.

An investigation into the nature of the long-time movements in production and prices, as well as into their influence on cyclical fluctuations.

Wave Mechanics, by H. T. Flint, 117 pages, $1.25, published by E. P. Dutton Co., N. Y.

A brief but authoritative discussion of the most recent development of physics, one of two new methods of approach to atomic physics, based on concepts of continuity.

World Politics in Modern Civilization, by Harry Elmer Barnes, 608 pages, $5.50 net, Alfred A. Knopf, New York.

A frank and unconventional presentation and appraisal of the leading trends in world politics and international relations since the period of the discovery of America.

A Concise Summary of Elementary Organic Chemistry, by Frederick H. Constable, 149 pages, $2.00, published by Dutton Co., New York.

A review textbook designed for quick surveys before examination time.

American Petroleum Refining, by H. S. Bell, 631 pages, $6.00, published by D. Van Nostrand Co., New York.

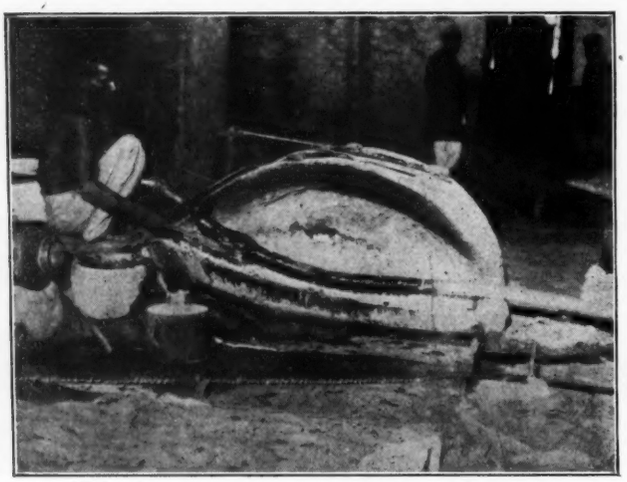
The new second edition brings up to date the latest practices and the trend of modern development in the technique of petroleum refining.

Pharmaceutical Mathematics, by Edward Spease, 126 pages, $1.75, published by McGraw-Hill Book Co., N. Y.

A text to guide the teaching and study of mathematics necessary for carrying out pharmaceutical operations.

Properties and Uses of Drugs, by Rusby, Bliss, Ballard, 823 pages, $6.50, published by P. Blakiston's Son & Co., Inc., Pa

A textbook designed to meet the requirements of both pharmacy student and practicing pharmacist.



A native heating and rolling the lac preparatory to stretching it into large thin sheets

How SHELLAC is Made

By John Clarke

Knight and Clarke

OF ALL the resins of first commercial importance, shellac is the only one which is produced by an insect. This insect is a native of India and is found to a lesser extent in Burma and Siam. It may be described as a plant louse whose host may be any one of seven species of trees growing generally at an elevation of over a thousand feet in a fairly temperate and equable climate. It emerges as a minute purplish speck from the body of its dead mother who has cemented herself to a twig, and crawls languidly about until it has found a home for itself in the shape of a fresh and succulent twig or shoot. Into the soft bark this minute creature (about 1/40th of an inch in length) inserts a very slender beak, finer than a hair, and here it remains, feeding on the sap and at the same time exuding from glands in its skin the material known as lac. The male insect after perhaps two months of this stationary life leaves its twig, fertilizes the females, and shortly thereafter dies. The female, who never leaves her twig, continues to exude lac for about two months after fertilization, and during this period produces an internal secretion which is of a reddish-purple color and which constitutes the material known as lac dye. She also excretes a sugary substance which drips from the twigs and is greedily sought after by ants and monkeys. Meanwhile the eggs to the number of a thousand or so are in process of formation. The female dies, and the larvae hatching from the eggs make their way through the encrustation of lac to seek fresh twigs. Thus begins the six months' life cycle of another generation of shellac insects.

The life of the lac insect at all stages of its career is precarious in the extreme. As a larva it is so feeble that unless it finds a suitable feeding place within a few hours after emerging it dies of exhaustion. Birds, insects, monkeys, and squirrels prey on it not only in the larvae state but even after it has surrounded itself with an armor of lac. In addition to this it is unable to accommodate itself to more than a narrow range of climatic and dietary changes. It will be evident that even under favorable circumstances there must always be a large percentage of insects which fail to reach maturity.

Inasmuch as the lac insect is a plant louse feeding exclusively on the sap of its host tree, the host will in time show the effects of this continuous drain. The portions infected tend to lose their foliage, to dry up, and finally to die; and if the infection is sufficiently extensive the whole tree may perish. In order to moderate this condition and to ensure easy access to fresh sap it is the custom of lac cultivators to place bundles of lac-encrusted twigs in uninfected trees at the time of gathering the crop. This prevents the old host trees from being overrun and gives the larvae, as they hatch out, an immediately available feeding ground.

Lac Collected Twice Yearly

Twice a year, shortly before or shortly after the larvae make their appearance, the lac is collected. The twigs on which it has been deposited are cut off and the lac separated by scraping, soaking in water and then splitting the twig, or by pounding. It is then carefully dried in the shade, and enters commerce as stick-lac, the raw material from which shellac is made.

Stick-lac consists principally of lac resin, the essential and valuable constituent of shellac, contaminated, however, with varying amounts of woody matter, lac dye, insect remains, and other impurities. It is first picked over by hand and sifted. What remains on the sieve (a No. 6 mesh) is crushed until it will pass

through. The picked and sifted material is next winnowed to remove most of the remaining woody matter and dirt, and now constitutes unwashed

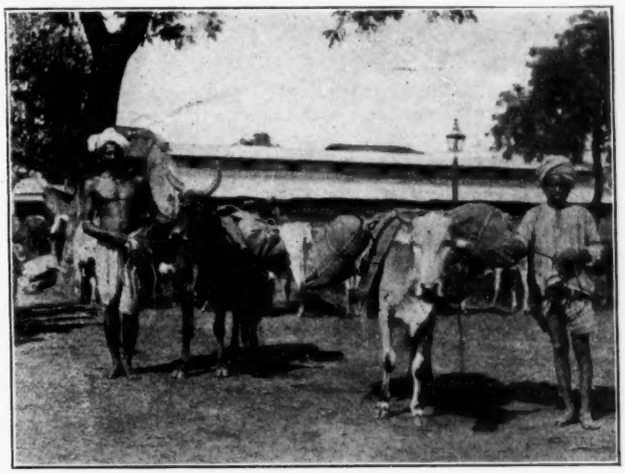
Native tree owners gathered about a pile of stick-lac bargaining for the sale of their crops. The buyer covers his hand and that of the seller with a cloth and they arrive at a price by a system of grips

seed-lac. This seed-lac (also known as grain-lac) is washed with several changes of water, either mechanically in horizontal iron cylinders fitted with revolving agitators, or else in stone pots, the inside surface of which is serrated to give a washing board effect when the seed-lac is rubbed against it by the hands or feet of the operator. This treatment results in the removal of most of the lac dye, to facilitate which additions of small amounts of sodium carbonate or borax are sometimes made to the earlier wash waters. After washing the seed-lac is carefully dried, and separated by winnowing into large, small, and fine grains.

Preparing the Shellac

From this seed-lac shellac itself is prepared. As it is important for the manufacturer to keep his various grades and brands (known in the trade as "marks") of uniform quality, and as seed-lacs, even from the same locality, are subject to variation, the production of a standard shellac calls for great care and skill in blending different kinds of seed-lac to obtain the desired result. After blending, the seed-lac, if it is to be manufactured into the grades or brands carrying such ingredients, may undergo additions of small amounts of yellow arsenic sulfide (orpiment) or rosin, or both. The prepared seed-lac is now ready for the heat treatment which converts it into shellac.

It is first poured dry into closely woven cotton bags about 30 feet long and 2 inches in diameter. These bags are handled by three workmen—the roaster, the stretcher, and the bag-twister. The roaster sits at one side of a fireplace built in the form of a Dutch oven three feet long, one and one-half feet high, and one foot in depth, and containing a charcoal fire. The bag-twister lays the bag filled with seed-lac along a series of guide blocks, with one end alongside the fire and within reach of the roaster, and attaches the other end to a windlass. By means of this windlass he gradually twists the portion of the bag lying before the fire so that its contents are evenly and thoroughly heated all through. As the lac begins to melt, the roaster seizes his end of the bag and draws it tight, thus increasing the tension and forcing the lac through the fabric. With a scraper he removes this lac and throws it on the smooth stone hearth which is kept moist. From time to time he takes the lac from the hearth and bastes it on that portion of the bag which is in front of the fire until it has acquired the right consistency. When enough of this well-mixed lac has collected on the bag he removes it with a spatula and pours it over a porcelain cylinder, filled with warm water and lying beside him. The stretcher now spreads the resinous mass out on the cylinder, polishes it with a cloth, and carefully removes it in the form of a sheet measuring approximately two feet by 1½ feet. This he seizes with hands, feet, and mouth, and stretches until it measures from 3 by 4 to 5 by 4 feet. When cold this sheet is broken into small pieces which constitute the flake shellac of commerce. The varieties known as garnet and button lac are manufactured by a similar process. Garnet lac is spread out on the water-filled cylinder and removed without stretching into thin sheets. Button lac is removed



India's shellac industry continues to be primitive in its primary stages. Here are bullocks carrying shellac to the market

from the surface of the melting bag by a special tool which permits its being poured on a metal plate or palm stem to form buttons about 2½ inches in diameter by 1/3rd inch thick.

The residue remaining in the bags after the shellac has been squeezed out is known as kiri. It is a black and sticky mass consisting of insect remains, fibre and woody material, lac resin, and lac wax. By extraction with alcohol kiri yields a solution from which garnet lac may be manufactured; it is also used locally for making bangles and toys.

Most of the shellac of commerce is made by the laborious method outlined above. A small proportion

is "machine made," that is to say it is prepared by treating stick-lac, seed-lac or kiri with appropriate solvents, separating the resinous solutions by filtration, etc., and removing the solvents by evaporation under suitable conditions. Such a process gives a very clean and uniform product, and has the advantage of being largely mechanical. The respective merits and demerits of "native" and "machine-made" shellacs are a fertile and never-ending subject of argument in trade circles. The writer will only remark that both are good—in their proper place.

Adding Orpiment to Shellac

The addition of small amounts of yellow sulfide of arsenic (orpiment) and of rosin to seed-lac used in the manufacture of certain grades of shellac has been noted, and it may be well to say something of them here. The addition of orpiment has the effect of very much lightening the color of shellac, and is a practice of very long standing. If such a shellac, however, is dissolved in alcohol and allowed to stand, most of the orpiment which has been incorporated with it settles out as a fine yellow sediment, and filtration of the settled solution will remove still more. But even after this double treatment it will be found that the clear shellac solution still contains orpiment which is apparently chemically combined with the shellac, upon which it may be said to exert a "vulcanizing" action somewhat analogous to that of sulfur upon rubber, making it more suitable for certain purposes.

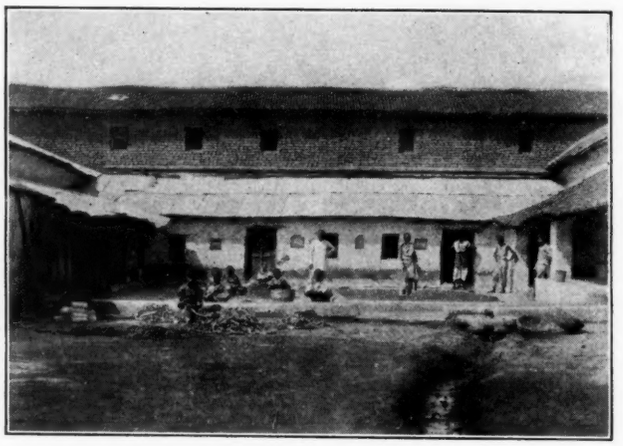
The presence of rosin in shellac is happily on a very different footing from the conditions that obtained in "the good old days." In those benighted times rosin, trash, brown sugar, sand, and brick dust were the favorite playthings of unscrupulous manufacturers, and much of the shellac entering the port of New York was as well adulterated as many of the foodstuffs of that period. To put an end to this state of affairs, the reputable importers formed an Association. Limits of rosin and insoluble content were established for the various grades of shellac, and methods of testing were standardized. The result was that gross adulteration rapidly disappeared, and conditions in general improved steadily and continuously.

Rosin in Shellac

For some uses a shellac containing a small amount of rosin is more satisfactory than the same shellac rosin-free. The production of such shellacs is demanded by the trade, and the rosin in them cannot be considered as an adulterant, especially as the rosin content of any particular grade is now a definitely prescribed and well-understood percentage.

The shellacs which have been touched upon are all of Indian or Continental manufacture. In this country these are further processed to make bleached or, as it is commonly known, white shellac.

White shellac is made by dissolving a suitable grade of shellac in sodium carbonate solution, filtering, and adding to the alkaline filtrate a solution of sodium hypochlorite which was formerly prepared by adding sodium carbonate to bleaching powder solution, but which is now generally manufactured by passing chlorine into aqueous sodium hydroxide under carefully controlled conditions. When the sodium hypochlorite has acted for the requisite length of time, the solution is acidified to precipitate the shellac. The pale yellow precipitate is thoroughly washed with several changes of water, and either formed into hanks, or, as is now more usual, ground and dried at



Natives at work in their crude factory selecting and preparing shellac for the foreign market

a low temperature to a moisture content of approximately 6 per cent. This constitutes the "bone dry bleached shellac" of commerce.

From bleached shellac is manufactured the refined shellac much used in nitrocellulose lacquer and special finishes. This is simply a wax-free white shellac, which when dissolved in alcohol gives a beautiful pale yellow, transparent solution instead of a milky white one.

Our Most Versatile Resin

Shellac is not only the one resin of great commercial importance produced by an insect; it is unique also in other respects. Of all the natural spirit-soluble resins it is the most valuable. Place any of the others in a mortar and pound them—they fall to dust or else form a sticky mass. Dissolve them in a solvent, varnish wood with the solution, and examine the dry film—it is either too soft or too friable. In the mortar, shellac displays astonishing elasticity; as a wood-finish it has the requisite resistance to pressure and abrasion. These properties appear in its manifold applications in the arts and industries and sufficiently explain the high regard in which it has been held for centuries. Like any other resin, natural or artificial, it has its limitations, but of all resins it is beyond question the most versatile.

The Search For New Uses Of Aluminum Chloride

Although lower prices of technical anhydrous aluminum chloride have already made themselves felt, "the future of this chemical is destined to be interesting, if not great," in view of the present research activity directed towards new uses.

By P. H. Groggins

Color and Farm Waste Division, Bureau of Chemistry and Soils,
U. S. Department of Agriculture

THE introduction of anhydrous aluminum chloride within the price range of heavy chemicals is the beginning of a living chemical drama. As the plot unfolds the action is shown by the disclosures in the patent literature which record the novel achievements in its preparation and application, while the scenes are presented in the form of extraordinary developments in industry.

Until recently, practically all the *technical* anhydrous aluminum chloride manufactured was used in the cracking of petroleum. Its advantage in increasing the production of light distillates is generally appreciated. Concrete evidence of this fact is found in the large number of patents covering its application in oil technology, and the successful operation of plants utilizing this process. Technical aluminum chloride manufacture consequently developed as an adjunct of oil production. The product was consumed at the point of manufacture and did not enter into the ordinary channels of commerce. From the figures supplied by McAfee it is estimated that the Gulf Refining Company alone uses approximately 10,000 tons annually. Increased facilities for its production, along with the prospect of greater profits resulting from the opening of new consuming markets have been partly responsible for its introduction into the chemical market. On the other hand the knowledge that the aluminum halide was available at such a drastic reduction in price led to immediate inquiries from many quarters where a real or potential use for it existed.

Two Processes of Manufacture

This article deals briefly with the use of aluminum chloride in the dye and textile industry. Heretofore a product obtained by the chlorination of scrap aluminum was used almost exclusively. This material is a colorless powder unlike the brown granular product obtained by the chlorination of bauxite in the presence of a carbonaceous compound.

In 1926 at the Philadelphia meeting of the American Chemical Society considerable discussion took place on the relative merits of the two competitive processes for making anthraquinone. The older procedure of oxidizing anthracene with chromic acid was well known. Its difficulties were appreciated and its limitations fairly established. The newer procedure involving the Friedel-Crafts condensation of benzene with phthalic anhydride in the presence of aluminum chloride, had passed from its development stage and had arrived at industrial maturity and had attained at least temporary economic security. Two factors contributed to its success: (1) the introduction of aluminum chloride at a reasonable cost, and (2) the discovery of the air oxidation process for making phthalic anhydride from naphthalene. The keto acid which is obtained by this condensation is easily converted to anthraquinone simply by dehydrating it with concentrated sulfuric acid.

Uses in Anthraquinone Production

The past few years have witnessed a rapid growth in the preparation of vat dye intermediates in which anhydrous aluminum chloride is the catalytic and condensing agent. The Friedel-Crafts synthesis is used not only for the manufacture of anthraquinone but also in the preparation of numerous other derivatives, such as B-methyl-anthraquinone, B-chloro-anthraquinone and naphthanthraquinone.

A process which has an important bearing on the aluminum chloride market is the preparation of anthraquinone by the catalytic oxidation of anthracene. The research division of the Selden Company has shown that crude anthracene can be cheaply and satisfactorily purified by treating it with furfural (U. S. Patent 1,693,713), and that anthraquinone of a high purity can be obtained by passing the purified anthracene over a vanadium catalyst (U. S. Patent 1,685,635). Whether the numerous details of catalysis and engineering inherent in a commercial procedure of this character have been worked out is not definitely known. It would be indiscreet to draw premature conclusions on the probable future influence of this procedure on the anthraquinone market, owing to the fact that catalytic processes unlike chemical operations are not amenable to accurate, analytical evaluations. Two known factors would, however, tend to minimize the influence of the catalytic oxidation process. The catalysis must necessarily be confined to the preparation of anthraquinone, whereas the Friedel-Crafts synthesis may be used for the direct preparation of many substituted products. These derivatives often make economies in manufacture possible by eliminating one or more steps in subsequent operations. An examination of the data contained in the census of the Tariff Commission reveals the tremendous increase in anthraquinoid colors during the past few years. (Table 1.) Unmistakable

Table I.—Vat Dyes other than Indigo.

Year	*Domestic Production* (*Pounds*)	*Import*
1924	1,821,319	1,493,851
1925	2,608,361	2,418,842
1926	2,815,241	1,845,208
1927	4,925,512	1,724,910
1928	6,514,132	2,301,761
1929	9,000,000+	2,696,124*

*Constitutes 42 per cent of all dyestuffs imported.

indication of future expansion is contained in the recent patent literature. Such observations indicate that the equipment for carrying out the aluminum chloride condensation is a necessary part of every progressive dye plant. Finally, since most of the prominent dye manufacturers also produce phthalic anhydride, it would appear advantageous for them to possess definite regular outlets for this product, particularly when economies can be effected by limiting the amount of purification or treatment given to it. It appears probable therefore that catalytic anthraquinone would at best have only a limited market.

The second obstacle in the path of the catalytic process is the recent introduction of an inexpensive but eminently satisfactory technical anhydrous aluminum chloride. For the time being at least the low price of this material has relegated the catalytic oxidation of anthracene to a position of commercial possibility rather than probability. Heretofore there was room for conjecture and debate, but a comparison of the approximate cost data shows that the Friedel-Crafts synthesis for the preparation of anthraquinone now has a distinct advantage. Total cost data are advisedly omitted as the purpose of the figures presented below is merely to show the importance of obtaining a cheap but satisfactory aluminum chloride. Those who are familiar with this synthesis appreciate that the yields in the preparation of keto acid and anthraquinone are close to the theoretical.

Comparison of Anthraquinone Costs

For the preparation of molecular quantities or 208 pounds of anthraquinone, the following materials will be theoretically required.

	Materials	*Cost*	*Cost per 100 lbs. anthraquinone*
78 lbs.	benzene at $ .04	$ 3.12	
148 "	phthalic anhydride at $ .13	19.24	
226	keto acid = 208 lbs. anthraquinone	22.36	$10.75
	The cost of anhydrous aluminum chloride will be		
280 lbs.	refined at $ .125	$35.00	$16.82
	or		
293 "	technical at $ .05	14.65	7.04
	Difference in cost of condensing agent		$ 9.78

From these data it appears that a saving of $9.78 per 100 pounds of anthraquinone is made possible by the use of technical aluminum chloride. In fact this economy is almost as great as the cost of the reacting materials, benzene and phthalic anhydride.

Advantages of Technical Grade

Considerable apprehension was felt at first regarding the feasibility of using the technical condensing

Table 2.—Some Applications of Anhydrous Aluminum Chloride in the Preparation of Organic Compounds.

Patent	*Purpose*
U. S. 1,734,029	Preparation of benzoic acid from cyanogen chloride.
British patent 16,271	Preparation of benzanthrone from phenyl a-naphthyl-ketone.
" " 279,506	Preparation of diacidyl derivatives of naphthalene.
" " 250,897	Preparation of amines and nitriles by treating aromatic hydrocarbons or their derivatives and organic carbonyl compounds with hydrazoic acid.
" " 306,477	Conversion of hydrocarbons soluble in liquid SO_2 and liquid at ordinary temperatures into high content of benzene and toluene.
Austrian patent 110,530	Preparation of dibenzoyl-perylene and other derivatives.

agent in the preparation of vat dye intermediates. Generally speaking it may be said that this fear is quite groundless. The principal impurities in technical aluminum chloride are ferric chloride and silicon-tetrachloride. These constituents are not inert. Ferric chloride is a moderate condensing agent and the silicon halide contributes in maintaining an anhydrous condition during the reaction. Chemically these constituents behave like aluminum chloride and are removed in the same manner during the course of operations. It is believed, and considerable evidence can be adduced for this view, that the iron and silicon chlorides enhance the value of the condensing agent by giving it better physical and chemical properties in much the same fashion that magnesium carbonate and potassium iodide give table salt better physical and physiological properties. The technical product is granular and flows easily through the charging apparatus. It does not absorb moisture so readily in contact with the air, thus making possible ease and efficiency in handling. It is not so reactive at ordinary room temperature, a characteristic which makes possible a thorough mixing of the reacting materials before the charge is warmed to the operating temperature and is greatly instrumental in suppressing the formation of undesirable by-products. Finally, recent investigations by Boswell and McLaughlin (Canadian Journal of Research Vol. 1, No. 3, 1929) appear to indicate that although ferric chloride itself has only about one-third the condensing activity of aluminum chloride it greatly contributes to the activity of the latter when the two are combined.

Search for New Uses

These attractive properties are responsible for placing technical anhydrous aluminum chloride alongside of borax in the list of new inexpensive heavy chemicals. Operations which were once prohibitive on account of the cost of this agent are now commercial possibilities. The patent literature discloses feverish activity in devising novel processes for its preparation. Recent research reveals many new and interesting uses for aluminum chloride both as a catalyst and a condensing agent. A few applications in the field of organic chemistry, picked at random, are listed above. Other uses which may be discussed in a subsequent communication are even more interesting. The future of aluminum chloride is destined to be interesting, if not great, as its uses are manifold.

By far the largest use for anhydrous aluminum chloride in organic synthesis is in the manufacture of anthraquinone and its derivatives. In the event of contingencies affecting national defense, the preparation of acetophenone would undoubtedly create a large market for this material.

Domestic Dye Production Increases 14 Per Cent in 1929

Production of domestic dyes in 1929 was approximately 110,200,000 pounds, an increase of 13,570,000 pounds, or 14 per cent, over production in 1928. The value of the output due to a decrease in prices was less than half that of 1920—the year of maximum value of production. Sales of dyes in 1929 amounted to 104,690,000 pounds valued at $44,593,000 or 42.6 cents per pound. Both quantity and value of sales show an increase of 12 per cent over 1928, according to the U. S. Tariff Commission.

In 1929 dyes of domestic production supplied about 92 per cent of our consumption by quantity and about 80 per cent by value. There was in addition an exportable surplus of the bulk low-cost colors, principally indigo and sulphur black, of 34,000,000 pounds.

The production of vat dyes in 1929 established a new record with a total of more than 9,000,000 pounds, as compared with 6,514,132 pounds in 1928.

The weighted average price of all domestic dyes sold in 1929 showed virtually no change from the average for 1928.

Indigo, the leading color made in this country, shows an average sales price of 14.9 cents per pound in 1929, as compared with 14 cents in the previous year. In 1917, the first year in which domestic indigo was produced, it sold for $1.42 per pound. The pre-war price, when our entire supply was imported, was 15 cents per pound. The increase in the price of indigo was offset by decreases in the prices of a large number of other dyes.

The imports of coal-tar dyes in 1929 were by quantity about eight per cent of apparent consumption, assuming this to be equivalent to sales plus imports minus exports. Based on preliminary figures, dyes manufactured in the United States, accordingly, supplied about 92 per cent of apparent consumption by quantity. By value, domestic dyes supplied about 80 per cent of the consumption, assuming that consumption equals sales plus duty-paid value of imports less exports.

The total exports of coal-tar dyes in 1929 were 34,129,597 pounds valued at $7,276,618. This represents an increase of 6,305,333 pounds in quantity and an increase in value of 11.4 per cent over that of 1928. The exports consist principally of indigo, sulphur black and low-priced bulk dyes.

The imports of dyes during 1929 (preliminary figures) were 6,410,355 pounds, with a foreign invoice value of $5,359,058. This represents an increase of about 20 per cent by quantity and 24 per cent by value over that of 1928. Imports originate almost entirely in Germany and Switzerland.

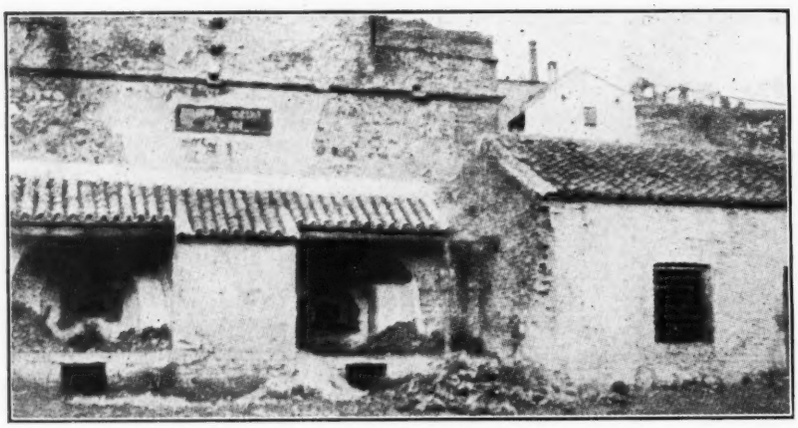
The production of synthetic resins in 1929 by 11 firms shows a 54 per cent increase over the production in 1928.

The total output of intermediates in 1929 was 349,226,000 pounds, as compared with 279,274,807 pounds in 1928. Sales totaled 147,418,000 pounds valued at $28,145,000, or a unit value of 19.1 cents. In 1928 sales amounted to 115,837,340 pounds valued at $24,126,473, or 21 cents per pound.

The production of synthetic organic chemicals of noncoal-tar origin in 1929 totaled about 607,611,000 pounds. Sales amounted to 380,896,000 pounds valued at $61,497,000. Compared with 1928, production showed an increase of 58 per cent, and sales an increase of 48 per cent in volume and 3.9 per cent in value.

For the second consecutive year this group of chemicals surpassed the sales value of coal-tar dyes, and showed a greater percentage of increase from 1928 to 1929 than the dyes. This group is one of the most important branches of the domestic organic chemical industry.

German Nitrogen Cartel is prolonged for seven years. I. G. Farbenendustrie with Norsk Hydro in Norway has now annual capacity of 840,000 tons against 400,000 three years ago, while other producers of synthetic nitrogen dependent on Farben are capable of 110,000 and independents of 160,000. Coke and gas plants have capacity of 100,000 tons. German production of nitrogen last year exceeded 50 per cent of world production.



Original Bustamente furnace built at Almaden, Spain, in 1646, and still operating

Mercury Re

By Charles S. W

Manager, Chemical Department, Henry W.

Although the mercury-producing centers of the world are widespread and numerous, Spain, and, through her courtesy, Italy, completely dominate the world's markets. In this, the second of a series of articles on this metal, where being ceedin with situati underl the pr tribut

ALTHOUGH many countries have worked ore deposits for mercury, the two determining factors of successful operation—continuity of the ore body and tenor of the ore—have economically resolved the producing centers into Spain, Italy and the United States. These countries for the past ten years (and even prior to that when consideration is given to the production of Austria, which in 1919 was granted to Italy) have accounted for over 90 per cent of the world's output of the metal.

In 1645 the Spanish Government assumed the working of what is conceded to be the largest and richest group of quicksilver mines in the world—the Almaden—which comprises four properties. The chief deposit, located in the province of Ciudad Real, about 45 miles west of the town of the same name and 125 miles southwest of Madrid, accounts for practically the entire Spanish output. These three ore bodies nearly parallel each other and extend over 200 meters in length and 12 meters in width. Contrary to normal experience in quicksilver mining, these ore bodies appear to become more extensive and richer the deeper the mining is carried. Based upon tonnage of ore mined and mercury produced, the average tenor of the ore over the 1917-1926 period was 5.2 per cent. As a matter of actual fact the percentage is much higher as, until very recent times, working has been carried on in a most obsolete and inefficient manner. Pockets of ore testing as high as 14 per cent have been found and the general tenor is most likely about 7 per cent. With these facts in mind it is easy to understand how, regardless of volume of production in other countries, Spain is dictator in the world's markets, and the knowledge of her domination should guide the working policies of other producing centers.

Italy at One Time Largest Producer

Italy, subsequent to her acquisition of the Idrian mines by the Treaty of Rapallo on Nov. 12, 1920, and up to 1927, was the largest producer of mercury. The Idrian mine located about 28 miles northeast of Trieste, together with the Monte Amiata group are the chief deposits. From 1470, when work was started under Formentini, title to the mine alternated between the Venetian Republic and Austria which latter country held it as Crown property from 1580 until 1920. The ore body extends about 4500 feet in length and workings on 13 levels have been conducted to a depth of over 1000 feet. A report in 1920 stated that four shafts were in active use and that 25 furnaces were required for treating the ore. The tenor of this ore as represented by actual recovery data from 1900 to 1918 varied from 0.61 per cent to 0.84 per cent.

Vast Mine Controlled by Italy

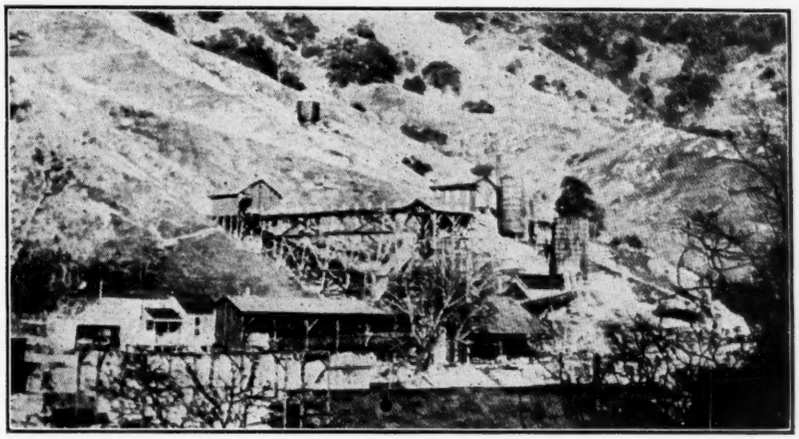
The Monte Amiata group, consisting of six major mines and numerous smaller ones, is located in the province of Tuscany midway between Florence and Rome. The production of this group greatly exceeds that of the Idrian mine and, of the group, the Abbadia—San Salvatore mine accounts for about 65 per cent. The tenor of the ore in this mine ranges from 0.25 per cent to a little over 1 per cent, the average being somewhere near 0.8 per cent.

No estimate is available as to the reserve of the Idrian mine and some claim the deposit is nearing exhaustion. The vast ore body of the Monte Amiata district is likewise undetermined but in 1926 the manager of the Société Monte Amiata stated that the reserves were equivalent to over 550,000 flasks. It is interesting to note that the Abbadia—San Salvatore mine is reported to have been the personal property of the German Emperor. At present both the Idrian and the Monte Amiata mines are controlled by the Italian Government through the Banca Commerciale.

Resources

S. Wehrly

Henry W. Peabody & Company



General view of the rotary-furnace plant at the Cloverdale mine, California

metal, Mr. Wehrly tells where it has been and is being produced. A succeeding article will deal with the political situation which is the underlying influence in the production and distribution of mercury.

In 1877 the United States was the world's largest producer with 79,395 flasks, which production however has continually declined, reaching a low point of 6,339 flasks in 1921 and increasing, thru the stimulus of high prices, to 18,108 flasks in 1928. Quicksilver is found in this country in the Western Coast states of Washington, Oregon and California; while deposits have been worked in Arizona, Texas, Montana, Idaho, Wyoming, Utah and Nevada. Alaska has also produced a small quantity. Within a region extending 400 miles north along the West Coast from Santa Barbara and 75 miles inland lies the greatest number of mercury mines-past and present.

Largest United States Mine

Probably the largest producer in the United States is the New Idria mine located in San Benito county, California, which produced in 1927 approximately 50 per cent of the total domestic output. From its discovery in 1853 to 1918, this mine has accounted for over 315,000 flasks, a quantity exceeded in this country only by the now unworkable New Almaden mine. The average tenor of all ore treated in California in 1926 was 0.51 per cent.

The work in Arizona during 1927 was chiefly in the nature of development, but prospects are for an increased production from this source. In Texas one mine is responsible for practically the entire state's output. This mine—the Chisos—is credited with a monthly production of over 100 flasks. Located in the Terlingua district in Brewster county, this property is so extensive as to comprise over 30 miles of underground workings and its ore reserves are stated to be far from exhausted. It is in this district that further developments may be expected not only from new mines but from existing mines now inoperative.

Although deposits are known to exist in the states of Montana, Wyoming, Idaho and Utah they have not been worked and in 1926 these states reported a production of but 6 flasks.

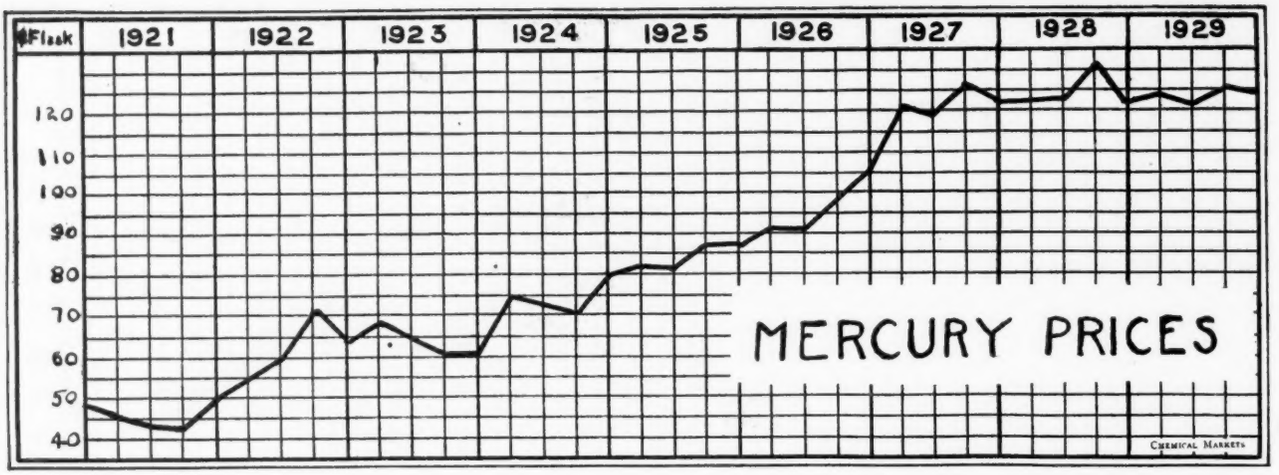
Considerable development is under way in Nevada and many old prospects have been reopened, within the the Winnemucca district the Goldbanks and the Mercury Mining Company's properties have been newly equipped, the latter company producing from ore which is said to run over 0.60 per cent. Reserves are estimated at over 150,000 tons with a likelihood of greater tonnage.

Mexico an Uncertain Source

Considering the United States as a unit, the tenor of ore based upon produced metal varied in the years 1917 to 1926 from a low of 0.30 per cent to a high of 0.63 per cent.

In 1929 Mexico exported to this country about 1200 flasks. Deposits in Mexico are many but changing political conditions have not been conducive to proper development. The principal deposit lies in the State of Guerrero near Huitzuco and has been worked since 1873. Political disturbance has played an unusual role in the progress of this mine but it possibly still holds value in its reserves. At Guadalcazar, in the State of San Luis Potosi, the Neuvo Potosi and Trinidad mines yielded at times as much as 700 flasks a year. Numerous deposits occur in the states of Jalisco, Zacatecas, Chihuaha and Hidalgo Could assurance of uninterrupted work be given, this country might be considered a more promising factor. The metal produced, however, is not looked upon with great favor, as not only does it come into the market contaminated with dirt but also, because of the the great percentage which is recovered from old silver workings and found in conjunction with other metals, with lead and arsenic.

In South America, mercury has been found in the Argentine, Bolivia, Brazil, Colombia, Ecuador, Para-



guay, Uruguay and Venezuela but it is only in Peru and Chile that production of any volume has been recorded. In the Province of Coquimbo in Chile, ore containing 0.40 per cent has been treated but since 1922 no record of further production is found and it is assumed that the workings have been abandoned.

Early Operations in Peru

In the year 1566 operations at the Santa Barbara mine in the department of Huancavelica, Peru, were started and it is stated that up to 1839, when active working of the property was discontinued, approximately a million and a half flasks of mercury has been produced.

An attempt was made in 1915 to reopen this mine but in 1926, after a large expenditure of time and money, the owner decided that the property was exhausted. It is interesting to note that the Department of Commerce of the United States reported an importation of 4 flasks from Peru in 1927 but, as a matter of fact, these were flasks exported from the United States and returned.

Alaska Not a Likely Factor

It has been reported that mercury was produced in the Kuskokwim district in Alaska from deposits discovered in 1884, but it is unlikely that the country will become a factor. Portugal and France have deposits but unlike Germany, where mines in the Bavarian Pfalz, now exhausted, were worked as early as the 13th century, they have not been found to be of any commercial value. Austria now produces but a small quantity as a by-product and in losing the Idria mine, lost its prominence in the mercury field.

We find reference to the workings of the Mount Avala mine in Serbia from 1889 to 1895 but apparently the deposit was too small or the ore too lean as no further metal is listed as coming from that country. In Turkey, the Kara-Burnu mine produced from 0.33 per cent ore a maximum of 3,000 flasks annually, but this production, owing to political circumstances, has ceased.

The Nikitoff mine, in the Donetz basin in Russia, was responsible for an output of over 1000 flasks in 1923 but records available show this production of late years to have been greatly curtailed. The extent of the ore body is not definitely known and it is doubted that the mine will ever be of great economic importance.

Mercury in the Far East

Throughout the Transvaal, in Abyssinia, Madagascar and in Algeria there are records of cinnabar deposits but in none of these countries has production been upon a commercial scale. In Sumatra and Java there are likewise deposits but only in Borneo is there any record of production and this from a mine which has apparently been abandoned. Beautiful specimens of cinnabar have come from the East Indies but the ore bodies are of such small extent that it would not pay to work them.

To encourage production at the New Zealand Quicksilver Company's mine in the Puhipuhi district the Government offered a bonus for the first 100,000 pounds produced. Ore bodies which in 1922 were stated to have been opened up to the extent of 60,000 tons of 1 per cent ore had produced up to 1920 a total of 395 flasks. No record is available for 1921 but 1922 showed a total of only 21 flasks and no further reports up to 1926 have been made. The character of the ore is such as to make furnacing difficult and the Thornhill wet process was proposed but with no appreciable success.

Deposits in Japan and China

In Australia there are records of deposits along the Queensland costal range but these, along with those reported in New South Wales, have not so far been producers. In 1922 came the reported discovery of a vein of mercury bearing ore 7 miles long and 6 feet wide near the village of Kita Uonome in Japan. It was contended that the ore assayed up to 1 per cent. In 1923 the reported production of Japan was 4 kilos and none has been made since. So rich a deposit as

this would surely show some results. In the provinces of Kweichow and Hunan in China 13,816 flasks were produced in 1925. Antiquated methods of mining and treating the ore, political disturbances and labor troubles all tend to diminish China's output and that country is still an importer of considerable quantities. There are possibilities in Southern China which might, under proper guidance, change this.

Spain Dominates Market

Thus, although throughout the entire world we find records of mercury, political, economic, and geographic reasons still permit Spain (and by her leave—Italy) to domininate the production and dictate the price of this metal in the markets of the world.

German Chemical Trade Loss Indicated by Stock Prices

In a country like Germany, where the interest on gilt-edged securities amounts to 8—9 per cent or even ten per cent, the financial state of an industry and its prosperity has to be judged in a different way than in countries where an interest of 5—7 per cent is considered as fairly good. The best proof that the present state of the German chemical industry is not considered as favourable is given by the valuation of the shares of the I. G. Farbenindustrie A. G., which declined to 170 per cent (about), though this big concern pays 12 per cent in dividends. But even when we include this trust in the 112 chemical companies to calculate average dividends, we arrive only at 9.9 per cent for 1928. Comparing such interest with that on gilt-edged securities, the result is by no means satisfactory, says "Chemistry & Industry," London. When, however, excluding this concern, we arrive only at an average interest of 7.1 per cent on 111 companies for 1928 and at only 6.8 per cent for 1927, this rate of interest actually means that the investor can make more money on his capital by not taking shares at present in a large number of German chemical companies, 20 per cent of which now pay no dividend at all. Statistics frequently lead to wrong conclusions, so the German export statistics may give the impression that the German export trade in chemicals is flourishing. Such opinion may be justified, when looking at the profitable export in nitrogen products, dyes, and some other specialties mainly produced or controlled by the I. G. Farbenindustrie A. G., and comprising £30—35 million yearly. But the remaining bulk of exported chemicals frequently does not represent any profit at all or is sold with a loss, only to keep the works going at increased manufacturing capacity, to distribute the general expenses over a large turn-over. Therefore it would be a mistake to conclude from the increased export trade in chemicals—1928, £65 million; 1927, £55.7 million; 1926, £50 million; 1925, £46.5 million; that such increase in turn-over or in exports means a large increase in profits. The fact remains not to be doubted, as stated in Chemische Industrie (p. 923, of August 10, 1929), that the risk connected with the permanently progressing chemical industry is not compensated by an interest of 7.1 per cent.

Spanish potash production during 1930 is set by the Government as follows: Minimum 40,000 metric tons and maximum 180,000 metric tons. The price set is 250 pesatas per ton of 80 to 85 per cent potassium chloride. Exportation is to be allowed when domestic needs are satisfied. Export price will be one per cent above preceding months domestic prices, according to the Department of Commerce.

Pyrites Abandoned as Sulfur Source by Rio Tinto, Ltd.

Rio Tinto, Ltd., announces decision to change from production of pyrites to that of by-product sulfur. The changing position of the sulfur materials trade is reflected in this decision which was announced by Sir Auckland Geddes, chairman, at the annual meeting of the company. According to the "Chemical Trade Journal," London, Sir Auckland dealt with the statistical position in regard to sulfur in considerable detail and gave it as his definite conclusion that the days of pyrites as a source of sulfur are numbered. With the availability of the apparently inexhaustible American supplies of pure sulfur, the difficulties in the way of the pyrites trade are increasing. These difficulties are likely to be intensified rather than diminished in the future. Within the past decade, at least, pyrites has only been able to sell as a sulfur raw material by virtue of a very favorable price differential to consumers, while the technical improvements made in the elaboration of burners for pyrites smalls has also helped the position of the latter material to some extent. Whereas the world's production of sulfur as brimstone has increased from 581,000 metric tons in 1900 to 2,795,000 metric tons in 1929, within the same period the tonnage of pyrites burnt has only risen from 4,000,000 metric tons to 6,429,000 metric tons; in other words, whilst the total world consumption of sulfur has grown from 2½ million tons to approximately 6 million tons in the thirty years period from 1900 to 1929, the relative importance of pyrites as a source of sulfur has fallen from almost four-fifths of the total in 1900 to just a little under one-half in 1929. At first thought it would appear that the growing world total consumption of sulfur, which is likely to expand still further during the present decade, would mean an adequate outlet for quantities of pyrites of at least the magnitude consumed in 1929, but apparently Sir Auckland Geddes not only sees no prospect of an increase in pyrites consumption but considers it only too likely that consumption will fall. His grounds for this belief seem to lie not so much in the continued competition of Italian and American sulfur, but rather in the increasing amounts of by-product sulfur likely to be put on the market and which will probably cause a demand for still cheaper pyrites. And this price question is obviously the crux. At the moment, as indicated above, consumers of pyrites are obtaining their sulfur under undoubtedly advantageous terms, but apparently any further reduction in pyrites sulfur prices are considered impracticable by the Rio Tinto producers at any rate. Further, even on an equal price basis, in the words of Sir Auckland Geddes, "sulfur in pyrites is the least popular form of sulfur in the world's markets."

Ammonium Sulfate Output Up

World production of ammonium sulfate in 1928 amounting to 3,700,000 metric tons was 9 per cent higher than the 1927 figure. More than 40 per cent of the output entered into foreign commerce. Germany was the largest single producer, being followed by the United States, Great Britain and France in the order named.

The table given below, compiled from the International Yearbook of Agricultural Statistics, 1928-1929, published at Rome, shows the ammonium sulfate production and foreign trade of the principal countries during 1928:

Metric tons

Country	*Production*	*Imports*	*Exports*
Germany	1,575,000	240	837,257
Belgium	132,000	50,581	15,637
France	218,000	215,950	20,128
Spain	.....	215,846	.....
Great Britain & N. Ireland	567,970	63	399,735
Italy	100,000	14,395	21,178
Netherlands	47,000	139,105	31,318
Poland	34,620	1,199	18,272
Czechoslovakia	65,272	1,109	2,866
United States	702,079	42,741	154,819
Taiwan	.....	100,989	13
Netherlands E. Indies	.....	122,740	.....
Japan	*150,000	284,481	7,792

*Estimated.

Russia's Chemical Activity

As is generally known, Soviet Russia has entered upon a five-year plan for industrial expansion. The development of the chemical industry forms a large part of this program and, notably in chlorine and air nitrogen, American chemical companies are financially interested. Thus, considerable importance attaches to this resumé of Soviet Russia's chemical progress during the first year of the plan.

By S. S. Shipman

Amtorg Trading Corp.

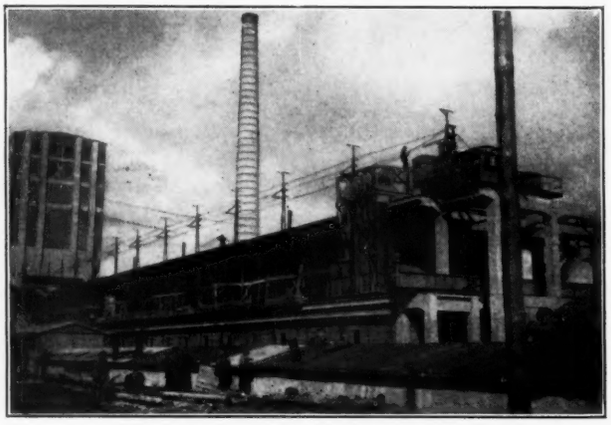
THE Soviet chemical industry showed a substantial rate of increase in the fiscal year 1928-29, in many cases exceeding the progress recorded in previous years. The production of all acids, 339,985 metric tons, was 15.2 per cent above that of the preceding year; the output of alkalis, totaling 326,184 tons, showed a gain of 14.4 per cent, while superphosphates (14 per cent), at 212,000 tons, recorded a gain of 41.3 per cent. The development of fertilizer production, and that of superphosphates in particular, is one of the principal tasks set for the chemical industry by the Soviet Government, in connection with the basic reorganization of agriculture now taking place in the U. S. S. R.

While the absolute figures for the output of the Soviet chemical industry are comparatively small, and far below the needs of the country, it must be remembered that the industry has had to be built up from the bottom in the past few years, since in pre-war times its level was even below the generally low level of Russian industry. The production of superphosphates in 1913 was only a little over a quarter of last year's total, while that of sulfuric acid was 55 per cent of the 1928-29 figure.

For the past fiscal year, ended October 1, 1929, production in the basic chemical industry totaled 1,077,845 tons as compared with 970,000 tons in the previous year. This category includes acids, alkalis, salts and fertilizers, production of which for the past two years is tabulated below:

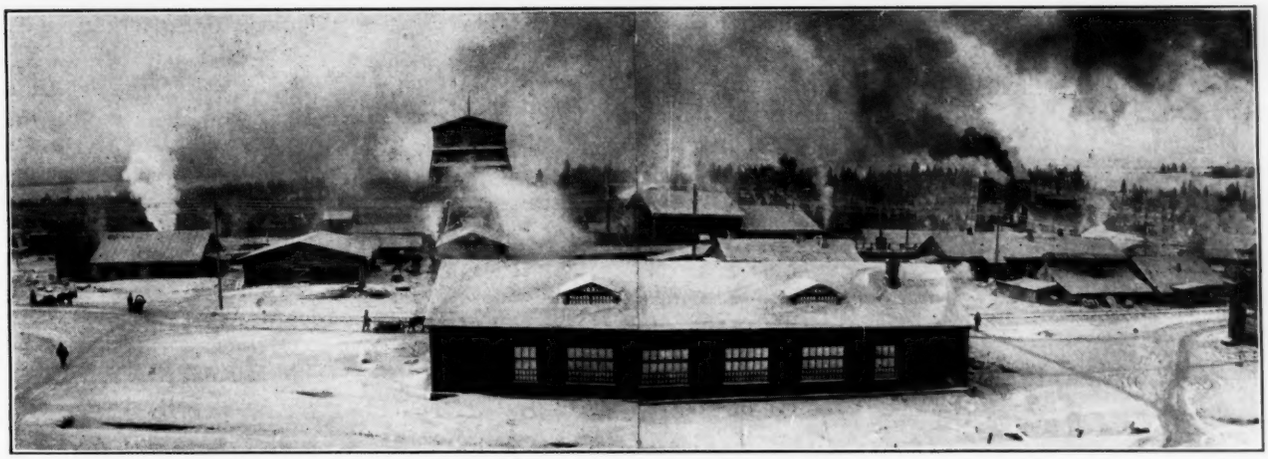
	(*Metric Tons*)	
	1928-29	*1927-28*
Acids	340,000	294,700
Alkalis	326,200	284,800
Salts	161,400	175,000
Fertilizers	271,400	209,000

Within these groups, the production of individual products in 1928-1929 was as follows: sulfuric acid, 263,475 metric tons; hydrochloric acid, 50,416 tons; calcined soda, 260,066 tons; caustic soda, 64,980 tons; sodium sulfate, 47,190 tons; zinc chloride, 12,252 tons; copper sulfate, 6,986 metric tons; 14 per cent-superphosphate, 212,000 tons; ammonium sulfate, 18,483 tons; ground phosphorite, 42,103 tons. Although these quantities represent considerable gains over the preceding year, they still come far from filling the needs, and construction is being pushed to meet the rapidly growing requirements.



A new coke oven at the Alchevski Metallurgical Works

Other branches of the chemical industry have exhibited similar growth. In the field of wood products, production of acetic acid (30 per cent basis) increased from 2,100 metric tons in 1927-28 to 7,600 tons in 1928-29 and rosin from 2,100 to 9,085 tons. Other products in this group manufactured last year include acetone (384 tons) and formaldehyde (1,100 tons).



The Solikamsk Potash Mines, at Solikamsk, Ural, the first Soviet potash mine which was sunk in 1927. A yield of 1,200,000 tons is expected the first year of operation (1930-31)

Dye production increased from 11,200 metric tons in 1927-28 to 13,224 tons in 1928-29, and intermediates from 5,700 tons in 1927-28 to 7,054 tons last year.

The paint and varnish industry, as tabulated below, showed a considerable expansion, but one somewhat smaller than that recorded in other branches:

(*Metric Tons*)

	1928-29	*1927-28*
White Lead and Zinc White	11,400	12,200
Varnishes	6,750	4,500
Ultramarine	3,300	2,400
Mineral Pigments	24,800	18,500

Other items in this category produced last year were litharge and red lead, 8,550 tons, and lithopone, 2,300 tons.

All the divisions of the fat industry, comprising the various soap and other fatty products, showed increases in production of from 100 to almost 300 per cent without being able to meet the demand. The output of household soap totaled 136,300 metric tons; that of toilet soaps was valued at 16,500,000 rubles and of cosmetics and perfumes at 3,430,000 rubles. Other commodities produced in this group, included glycerine (5,600 tons), liquid soap (3,000 tons), washing powder (13,000 tons) and candles (6,000 tons).

In the bone-reduction industries the principal products were bone glue, the output of which was 12,800 metric tons as compared with 10,900 tons last year, and ground bone, of which 33,500 tons were produced last year.

Chemical Industry Expanding Steadily

The expansion of the chemical industry has been continuing steadily into the current year, as shown by the figures for production in the first third of the year. During this period the production of acids, totaling 114,900 tons, showed a gain of 31 per cent over the corresponding four months of the preceding fiscal year. Alkalis, at 108,800 tons, recorded an increase of 10 per cent and household soap at 58,900 tons, a gain of 19 per cent.

The expansion of the Soviet chemical industry now taking place is part of an economic plan intended to change the U. S. S. R. from a primarily agricultural to an agricultural-industrial nation. A program has been laid out calling for an increase in the output of acid phosphate fertilizers from 150,000 tons in 1927-28 to 3,400,000 tons in 1932-33; of ground phosphorite from 65,000 to 1,200,000 tons during the period, and of nitrogen fertilizers from 5,000 to 800,000 tons. This program involves capital investments of 1,400,000,000 rubles ($700,000,000). For the current year, the schedules call for 475,000 tons of superphosphates, 360,000 tons of ground phosphorite, and 425,000 tons of 100 per cent sulfuric acid.

New Plants Under Way

The expanded production is to be made possible by the construction of a large number of chemical plants, some of which are already under way. These include a large central chemical combine in Moscow to cost 60,000,000 rubles, a combine to be built in connection with the Khopersk metallurgical plant, twenty-three phosphate plants and mills, six sulfuric acid plants, seven caustic soda plants, and many others. Another important development will be the construction of sixteen wood distillation and twelve rosin extracting plants. Production of the chemical industry proper (excluding rubber, matches, and other consumers' chemical products), is scheduled to total 515,000,000 rubles in 1929-30—49.5 per cent more than in the previous year.

The Supreme Economic Council has allotted over 300,000,000 rubles this year for investments in the chemical industry proper. Of this, 247,000,000 rubles will go for the basic chemical industries, 11,000,000 rubles for the wood distillation industry, and 13,000,000 rubles for the aniline dye industry.

Among the chemical plants in which construction is being carried on this year are eight large fertilizer combines, located mainly in the Ukraine Republic and in the Urals. The combined cost of these plants, which are scheduled for completion in 1932 and 1933,

is $125,000,000. Operations are being pushed in the potash mines of Solikamsk in the Urals. These recently discovered deposits are considered to be among the world's largest. Four large soda works will be under construction during the year, at Slaviansk and in the Donetz Basin of the Ukraine, at Lake Mikhailov in Siberia and at Berezniaki in the Urals. It is planned to finish these plants, with an aggregate cost of $25,000,000, in 1931 and 1932. These are only some of the more outstanding of the many chemical plants under way.

American Technical Assistance Imported

The task of fulfilling the ambitious program set for the chemical industry is a tremendously difficult one, especially in view of the fact that this is virtually a new industry for Russia. The problem of obtaining adequate technical personnel and a sufficient number of skilled workers is one of the most serious ones to be faced. One of the methods of solving this problem is the importation of the best technical talent from foreign countries, and especially from the United States. A number of so-called technical assistance contracts have been concluded with American firms and individuals calling for assistance in the design, construction and operation of chemical plants in the Soviet Union. These include agreements with E. I. duPont de Nemours and Company for assistance in building fertilizer factories; with the Nitrogen Engineering Company in the construction and operation of an ammonia fertilizer plant; and with the Westvaco Chlorine Products, Inc. for aid in the production of chlorine and caustic soda. One advantage which the Soviet chemical industry will have in developing production from its present low level will be the fact that it will be able to introduce the most modern technical methods without being burdened with a great deal of obsolete plant and equipment.

Soviet Russia a Good Market for Machinery and Equipment

Imports of equipment for the chemical industry of the U. S. S. R. have been considerable in the past few years. For instance, the Soviet trading organizations in Germany placed orders in the fiscal year 1928-29 for chemical equipment to the value of 4,214,000 rubles ($2,107,000). Purchases in the United States last year amounted to $975,670, several times the total for the preceding year. With the rapid development of the Soviet chemical industry now under way, there is no doubt that it presents one of the best markets for machinery and equipment to be found any place in the world.

Substantial purchases of semi-manufactured and finished chemical products have also been made abroad in the past few years. The Soviet Union last year was the third largest market for American rosin, coming after the United Kingdom and Germany. The exports of this product (to Soviet Russia in Europe only) increased from $336,693, in 1928 to $1,646,441 in 1929. In recent years the Soviet Union has also imported fairly large quantities of sulfur, saltpeter, iodine, quinine, dyestuffs and tanning materials. Imports of the latter amounted to 14,720,000 rubles in the fiscal year 1928, and of dye stuffs to 7,519,000 rubles.

The Filter Press

Charles F. Abbott, formerly director of sales of National Aniline, is advocating a national industrial and economical council to determine the reasons for present-day lack of profits in industry. He is now executive director of the American Institute of Steel Construction, Inc.

George Miller, chief engineer for the Carbide & Carbon Chemicals Corp., is among experts who will go to Pernambuco, Brazil, and supervise shipments and operations to that port in connection with the work of refueling the "Graf Zeppelin" at Pernambuco when it crosses the South Atlantic from Germany.

Arthur S. Somers, president, Fred L. Lavanburg Co., dry colors, New York, was tendered a dinner in Hotel St. George, Brooklyn, March 31, in commemoration of the opening of a new bank, National Exchange & Trust Co., of which he is president.

Dr. M. L. Crossley, Calco's chief chemist, was a member of the jury of selection which awards the annual gold medal of the Society of Arts and Sciences.

William J. Ellis of Publicker Commercial Alcohol is editor and publisher of the "Aronimink Beaver," a community newspaper published monthly in the interest of Aronimink, Pa.

L. W. Rowell, president of the National Fertilizer Association, has been in Washington attending the meeting of the Chamber of Commerce of the United States.

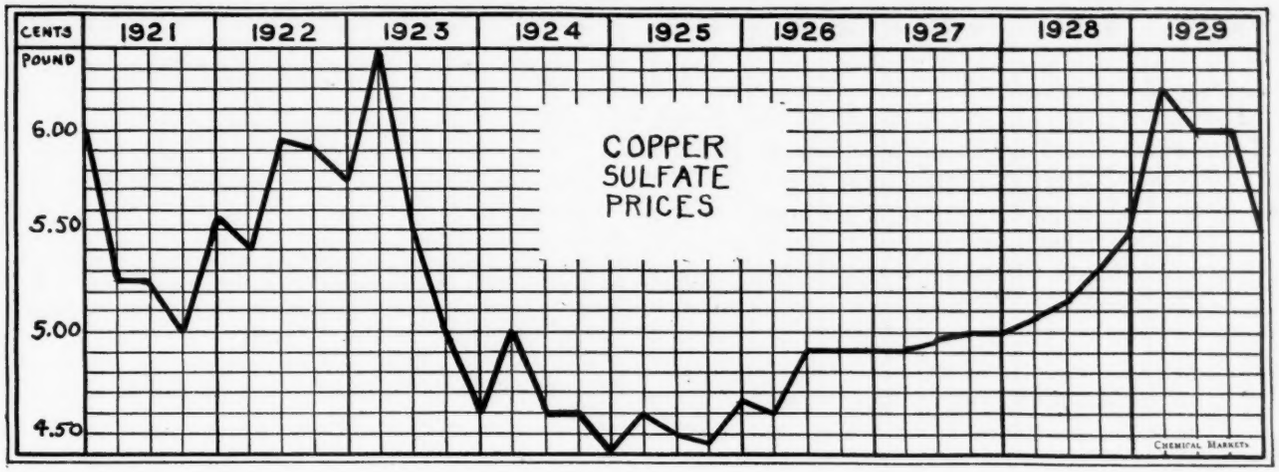
French Cyanamide Production Totals Over 60,000 Tons in 1929

French production of cyanamide slightly exceeded 12,000 metric tons in 1913. By the end of 1929 it had advanced to slightly more than 60,000 tons and there are prospects for a further gradual increase. This output is rather small, when compared with that of Germany, for example, but it has been made in the face of some difficulty—chiefly the lack of abundant and well-situated cheap power supplies.

Those regions of France which are supplied with sources of cheap power are at considerable distances from the sections which are the principal consumers of fertilizers, and the matter of transport, therefore, has been one of the problems of an industry which otherwise would seem to be fairly prosperous, according to the Department of Commerce.

The French producers of cyanamide are Less Produits Azotes, La Compagnie d'Electricite Industrielle, Kuhlmann (Societe Electro-Chimique de Brignoud), and Saint Gobain.

French State Nitrogen Factory at Toulouse produced 7,200 tons of ammonium sulfate and 630 tons of mixed fertilizers based on ammonium nitrate during January, 1930. The comparable figures for January, 1929, were 2,470 tons and 400 tons respectively.



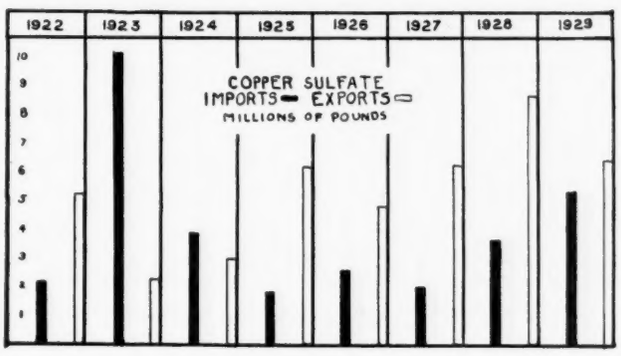
Copper Sulfate Prices

SURPRISE has been expressed in some quarters at the extent of the recent reduction in the price of copper from eighteen to fourteen cents a pound. The old level had been maintained for about a year and, even in the face of a general business depression, was thought to be fairly well stabilized.

Drastic curtailment of production did not succeed, however, in making the position of copper sufficiently comfortable, and heavy surplus stocks—at the end of March the largest in eight years—were reported, so that some price cutting below public quotations had been in evidence. The four cent reduction improved conditions to a certain extent but, at the date of writing (late April), the market is still weak with prices subject to shading.

Sulfate Market is Strong

Following closely upon the decline in the metal price, quotations on copper sulfate were lowered from $5.50 to $5.00 per 100 pounds. A half-cent per pound reduction would seem, at first sight, to be out of line, with a four-cent change in the price of copper, for the sulfate contains about twenty-five per cent of its weight as copper, requiring a one-cent reduction for equalization. But it must be remembered that, while the metal price has remained unchanged for about a year, the sulfate price was reduced 50 cents per 100 pounds during last October. At the present writing, it seems quite likely that this may work the other way in the near future. For, while copper is weak, copper sulfate is strong and approaching the season of peak consumer demand.



Copper sulfate is produced in the United States chiefly as an incident in electrolytic refining of the metal, but the volume of this production indicates its importance. According to figures published by the U. S. Government, production for 1927 (the latest year for which data is available) was 56,666,812 pounds valued at $2,774,400. The appended table gives the more nearly complete data available.

Year	*Number of Establishments*	*Refinery Production*	*Total Pounds*	*Production Value*
1921.....	11	26,097,993	27,221,704	$1,767,695
1922.....		33,402,515	33,402,515	
1923.....	10	31,354,828	32,304,421	1,777,663
1924.....		22,638,431	22,638,431	
1925.....	12	26,514,875	32,296,583	1,683,788
1926.....		33,889,421	33,889,421	
1927.....	11	36,609,188	36,609,188	

Last Year's Price Decline

Although in 1926, 1927, and 1928 exports greatly increased, in the latter year having been 8,666,899 pounds valued at $455,023, a sharp decline to 6,419,688 pounds valued at $368,481 occurred during 1929, and along with this, imports rose from 3,661,884 pounds valued at $172,256 in 1928 to 5,388,743 pounds valued at $272,859 in 1929. This, added to the fact that there must have been a tendency on the part of refiners to produce more copper sulfate in order to use up some of their excessive metal

stock, was probably the underlying reason for the drop in blue vitriol prices from $6.20 to $5.50 per 100 pounds during 1929.

Since 1919 there has been a steady increase in the agricultural use of copper sulfate. The practice of spraying vines, fruit trees and vegetables with Bordeaux mixture or dusting them with copper-lime dust, is extending rapidly everywhere. Potatoes and apples cannot be grown commercially without spraying and the same holds true for celery and citrus fruits.

Another gradually widening field for the use of copper sulfate is in the treatment of water supplies. This is not a new use, as some communities have treated their reservoirs with blue vitriol for many years, but of late many others have adopted the practice. This application controls the microscopic organisms which produce tastes and odors in the water; also it removes the unsightly algae and scums which accumulate on the surface in the summer months. Copper sulfate is also one of the best fungicides for use in swimming pools.

It has come into rather large use in the recovery of metal values by the method of differential flotation, making profitable the treatment of material carrying low metal values which hitherto have not been considered worth treatment.

On the other hand, the use of copper sulfate by railroads, in wet cells, has declined within ten years from a very considerable tonnage to an almost negligible amount, other types of cell having replaced the gravity battery using blue vitriol, and in many instances, the railroads are using their power lines to operate signals.

Owing to the change in demand for certain fabrics which require copper sulfate in their preparation, there has been a marked decline in its use by textile manufacturers. During and immediately following the war, a large tonnage went into this field which now calls for much less.

The balance, however, seems to be moving in the direction of increased use of copper sulfate, not so much in the development of new uses as expansion of old ones.

French fertilizer industry during 1929 continued to increase production and to better the methods of manufacture. France, a large exporter of phosphatic fertilizers for many years, and of potash salts since the close of the World War, is now in position to fill all its own requirements of ammoniacal nitrogen, and more than one-tenth of its consumption of nitrates. French manufacturers now offer a very diversified line of fertilizer chemicals including calcium nitrate, potassium nitrate, sulfonitrate of ammonia, ammonium phosphate, phosphazote, uraphos, and mixtures of ammonia and potash salts such as potazote, nitropotash and nitropotazote, reports the Department of Commerce.

The trade in fertilizers is becoming of increasing importance in the French national economy. The secretary of the Academy of Agriculture places the annual value of the domestic fertilizer consumption at over $78,600,000. For the first ten months of 1929 the value of imports of fertilizer materials into France amounted to $37,453,000, while the value of exports totaled $22,794,000.

Who's Who In Chemical Industry

Batchelor, Harry D., director of research, National Carbon Company, Inc. Born, Garland, Me., 13 Aug. 1880; mar. Ella Mabel Harris, Sharon, Pa., 16 Nov. 1910; children, 1 dau.; educat., Univ. New Hampshire, B. S., 1903. Carnegie Steel Co., So. Sharon, Pa., chem. engr., 1905-09; Natl. Carbon Co., Inc., chem. engr., to dir. of res. Memb., Amer. Chem. Soc. (past chmn. industrial sect. & Cleveland sect.); Kappa Sigma; Masons. Clubs: Chemists' (N. Y.), Lakewood Country (Cleveland). Address: National Carbon Co., Inc., 1280 W. 73rd St., Cleveland, Ohio.

Berry, Howard, comptroller, The Mathieson Alkali Works, Inc. Born, Hackensack, N. J., 25 Mar. 1886; mar., Florence Sparrow, Lincoln Park, N. J., 4 Oct., 1920. Public accountant prior to 1916; Amer. Internatl. Corp., gen. aud., 1916-21; Remington Arms Co., Inc., comptroller, 1921-23; The Mathieson Alkali Works, Inc., compt., 1923 to date. Capt. Chem. War. Serv. (Gas Mask Div.). Memb., Natl. Assn. Cost Accountants (former dir. of N. Y. Chapt.); Maplewood Country Club, Address: The Mathieson Alkali Works, Inc., 250 Park Ave., New York City.

Cadwell, Sidney M., research chemist, United States Rubber Co. Born, Boseman, Mont.; mar., Elizabeth Nichol, Chicago, Ill.; 12 July 1919; children, 2 daus.; educat., Univ. Chgo. B.S. 1914, Ph.D. 1917. Otto S. A. Sprague Inst., assoc. memb., 1916-17; Federal Dyestuff Chem. Corp., res. chem., 1917; U. S. Rubber Co., res. chem., 1919 to date. Capt. Chem. Warfare Serv., U. S. A., 1918; memb. Bd. Educat., Leonia, N. J. Patents on accelerators of vulcanization and anti-oxidents to preserve rubber from deterioration. Memb., Am. Chem. Soc.; Am. Inst. Chem. Eng.; Gamma Alpha (natl. vice-pres. & secy. 1927). Clubs: Chemists, Leonia Tennis, (gov. 1922). Hobby: tennis. Address: U. S. Rubber Co., 561 West 58th St., New York City.

Dawson, John Muirie, chief chemist, Geo. B. Smith Chemical Works, Inc. Born, Glasgow, Scotland, 1894; mar., Coral Gasperine Nurse, Worcestershire, Eng., 1919; children, 3 daus.; educat., Royal Tech. Coll., Glasgow; assoc. Inst. Chem. Gt. Britain & Ireland. Develop. Rubber Co., Robe, Japan, chief chem., 1919-23; Wishnick-Tumpeer, Inc., N. Y., chief chem., 1924-26; Geo. B. Smith Chem. Wks., chief chem., 1927 to date. Royal Engineers (British), 1915-17. In collaboration with H. W. Webb "The Economic Manufacture of Nitric Acid." Memb., Amer. Chem. Soc. Hobby: gardening. Address: Geo. B. Smith Chemical Works, Inc., Springfield, Ill.

Fales, John H., superintendent, Bowker Chemical Co., Born, Somerville, Mass., 1892; mar., O. E. Dennis, Boston, Mass., 1917; children, 2 sons; educat., Harvard College, A.B., 1914. United Fruit Co., Preston, Cuba, Experimental pulp and paper mill. 1914; United and Drug Co., Boston, Mass., stock office, 1915; Amer. Aniline Co., Lowell, Mass., 1916; Bowker Chem. Co., asst. supt., 1916-23; supt. at Everett, Mass., 1923; Balt., supt., 1926 to date. Memb., Amer. Chem. Soc., Rotary Club (Everett, Mass., 1924-25). Hobby: bowling. Address: Bowker Chemical Co., 1st st. & 10th ave., Baltimore, Canton, Md.

Gale, William A., assistant director of research, American Potash & Chemical Corp. Born, Lakefield, Ont., 3 Feb. 1898; mar., Evangeline Phillips, Vancouver, B. C., 18 Oct. 1926; educat., Univ. B. C.; B.A.Sc., 1922; M.A.Sc., 1923. Amer. Potash & Chem. Corp., res. staff, 1923-27; asst. dir. res. Apr. 1927 to date. Overseas with Canadian Field Artillery, 1916-19. Memb., Amer. Chem. Soc. Address: American Potash & Chemical Corp., Trona, Calif.

BAUXITE

Assumes new importance as a chemical material which will widen its market.

OUTSTANDING among the industrial chemical developments of the past year was the announcement by the Gulf Refining Co. of the manufacture of commercial anhydrous aluminum chloride in large quantities and at a new low price by the McAfee process utilizing bauxite. Earlier methods of producing this material were based upon the use of scrap aluminum as the basic raw material, which made for high prices and precluded the possibility of any such large scale production as would be necessary to satisfy the demands in the petroleum industry. This new process, using bauxite, made immediately possible the production of 75,000 pounds daily, which has since been increased to over 85,000 pounds at prices ranging as low as 5 cents per pound.

New Demands for Bauxite

Gulf Refining's new demand for anhydrous aluminum chloride rose out of its process for making gasoline from higher boiling hydro-carbons and of a process for refining petroleum oils in general, and lubricating oils in particular, by means of this chemical. Previous demands for aluminum chloride had arisen chiefly for the manufacture of anthraquinone, which process depends upon the property of aluminum chloride of combining with hydrocarbons to produce synthetic reactions. Thus the new demand far out-stripped in volume any which had previously existed for aluminum chloride and brought bauxite ore strongly to the forefront of chemical consciousness.

Bauxite has no definite mineral identity. It is generally considered to be a rock or earth containing large proportions of easily available aluminum oxide. It is widely found, being produced in large quantities in Austria, India, Dutch Guiana, France, Hungary, Italy and the United States. The United States ranks second only to France in bauxite production having produced 381,454 long tons in 1928 out of a total world production of about 1,760,000 tons, of which France contributed 597,810 tons. On the other hand this country consumes about twice as much bauxite as is produced here, imports for 1928 having been about 350,000 tons. Figures are readily available only for the distributions of uses for domestic bauxite, but probably the great bulk of the imported material is reduced to metallic aluminum.

Aluminum Industry Chief User

During 1928, 218,000 tons or 58 per cent of the domestic bauxite went into the manufacture of aluminum, 84,000 tons or 22 per cent, were consumed in the production of aluminum salts, 73,000 tons or 19 per cent entered into abrasive manufacture, while the cement and refractory industry consumed only 105 tons. As indicated by these figures, although by far the greatest use of bauxite is in aluminum production, its usefulness is not restricted to that field, and with the advent of the new process for producing anhydrous aluminum chloride directly from bauxite, its use in the chemical field is bound to show a sharp increase.

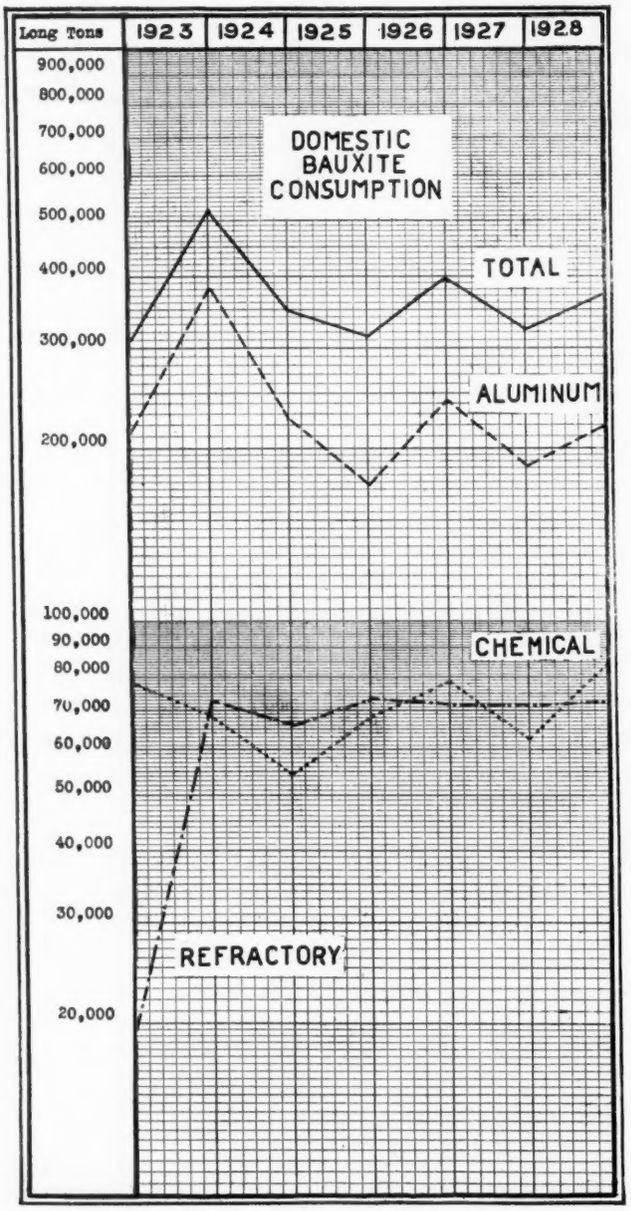
In 1928 the use of bauxite in the production of chemicals was about 84,000 long tons or only about 22 per cent of the total domestic production of the mineral. Yet these chemicals are extremely useful to certain large industries. The production of alums and aluminum sulfate was greatest in point of tonnage and value, having been for 1928 about 325,000 short tons, valued at about $8,000,000. These are manufactured by dissolving bauxite, or in some cases, aluminum oxide from bauxite, in sulfuric acid and allowing the solution to crystalize. In combination with rosin, aluminum sulfate is used in the sizing of paper, and has ex-

Loading bauxite by hand at the Three Friends mine, British Guiana. (Courtesy Aluminum Co. of America)

tended use in the general textile industry particularly in the application of color. Chlorine is, of course, the important water sterilizer, but in addition to sand filters, large quantities of aluminum sulfate must be used annually in the clarification of water. When dissolved in water, if the water is alkaline, the salt hydrolyzes to form a gelatinous hydroxide which in settling pulls down all suspended material and a proportion of dissolved substance, leaving a sparkling, clear liquid.

Aluminum chloride in solution is made by dissolving the hydroxide in hydrochloric acid and finds extensive application in the textile industry.

Bauxite has another widely extended use in the petroleum industry in addition to that discussed previously in connection with the Gulf Refining Company's process for making anhydrous aluminum chloride. This older use is based upon the fact that bauxite ore becomes highly adsorptive when heated to 400 to 600 C., and thus becomes valuable as a filtering bed in petroleum refining. It first removes color and then unsaturated compounds and sulfur. Its very great advantage lies in the fact that after calcination it is granular rather than powdered and may be used in beds, as is sand, in the purification of water. After the pores of the bed become clogged from the accumulation of gummy products, efficiency of the filter mass may be restored by heating in a furnace or treatment with super-heated steam or hot gases.



Another important application of crude bauxite lies in its use for the manufacture of aluminous cements. These are made by fusion or clinkering of bauxite and limestone, and consist of 10 to 12 per cent silica, 40 to 45 per cent alumina, 35 to 45 per cent lime, and 15 to 20 per cent iron oxide. These cements, called "ciment fondu" were first made in France and have had an important effect upon the whole cement industry. Their superiority lies in the fact that they harden very rapidly, requiring only 24 hours instead of the 28 days necessary for Portland cement. The threat of this new product was largely instrumental in bringing improved operations and lower prices to cement consumers. Now "super" cements, which harden much more rapidly than the old, have appeared, and may in time replace them almost completely.

Because of its very high melting point, 1,400° to 1,600° C., bauxite is used for fire bricks and furnace linings. It is best used, however, with neutral slag because it combines with both basic and acid products. On the other hand, its comparatively high heat conductivity makes for fairly extended uses. More expensive, and more heat-resistant refractories are made by the fusion of specially purified bauxite or aluminum oxide. The production of abrasives from bauxite is almost as large as its use in the manufacture of chemicals.

Aluminum, whose properties are too well known to require detailed description, is now made by the Hall and Heroult process from aluminum oxide. As pure material must be used, bauxite is refined by the Bayer process, by which the ore is treated in an autoclave with concentrated caustic soda, which dissolves the alumina and leaves behind most of the impurities. After dilution and filtration the solution is made to precipitate the hydroxide and the caustic recovered for further use. The dried oxide is dissolved in cryolite and electrolyzed, aluminum collecting at the bottom of the cell.

The history of the metal is much like that of other new substances. During the nineteenth century is sold for about twelve dollars a pound and was used in jewelry and novelties because of its color and notably light weight. In the last quarter of the century, however, Hall in this country and Heroult in France invented what has developed into the present process. Both of the inventors were quite young and both did large parts of their work in crude home

laboratories. At the beginning of the present century, the Aluminum Company of America, with aluminum at about 50 cents a pound, found that the demand did not meet expectations. Nobody wanted the new, light metal! The almost immediate requirement for cooking utensils was then comparatively small. But after the beginnings of the horseless carriage industry had given aluminum healthy encouragement, the world soon became aluminum conscious and is now using ever-increasing quantities, with the Aluminum Company of America and its associated company Aluminum, Ltd., supplying about half the total consumption.

Uses in Transportation

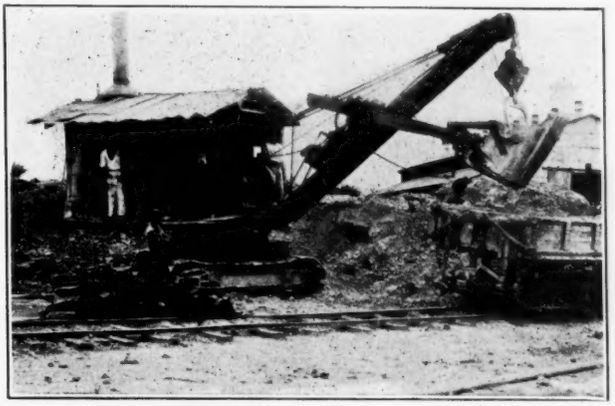
The most interesting developments in 1928 occurred in the industries of transportation—on land, sea, and air. Aluminum and its alloys are being used in railroad and street cars, in freight containers, commercial truck bodies, ships, airplanes, and airships. In the Graf Zeppelin, 30 metric tons of duralumin were used, while the 5 Maybach engines employed Silumin, another aluminum alloy, extensively. As aluminum has been available throughout the life of the modern

Drilling bauxite preparatory to blasting at Morengo mine, Dutch Guiana

air industry, it is difficult to say what would have been done without this light, yet strong metal.

The automobile industry, which at one time used aluminum extensively for car bodies but now seems to have turned to pressed and welded steel, is still the largest consuming industry, using aluminum for pistons, engine castings, forgings, connecting rods, crank cases, etc. The second largest use is for cooking utensils and household appliances. A recent, still tentative development consists of the use of aluminum cans for packing food instead of the familiar tin-plated article. Here, aside from the non-poisonous qualities of aluminum, the selling points are the high scrap-value of the cans, and the fact that paper labels, involving an extra operation, may be disposed of, the label being printed directly on the can. A probable handicap in this application is the difficulty in soldering aluminum easily. In Germany it is reported that aluminum plate, corresponding to tin plate, has been produced, but like developments have not yet occurred in this country.

The use of aluminum electrical conductors is, rather surprisingly, the third largest outlet for the metal. Finally, aluminum is used in steel and other metallurgy



Loading bauxite by steam shovel in a Dutch Guiana mine, (Courtesy Aluminum Corp.)

as a deoxidizer, assuring ingots comparatively free from blowholes.

Aluminum powder is increasing in use as paint. This paint has been used for some time to reduce losses from petroleum storage tanks because of heating, but the newer use of foil for this purpose is quite promising. According to this method, the foil, from rolls, is glued on the surfaces to be protected. As the protection from solar heat depends upon the ability to reflect light, the new finish is undoubtedly advantageous. It has also been used in place of paint for protecting pipelines from corrosion. Aluminum foil finds extensive application as a wrapping material and in radio condensers. Collapsible tubes of the metal are replacing those made of lead and tin.

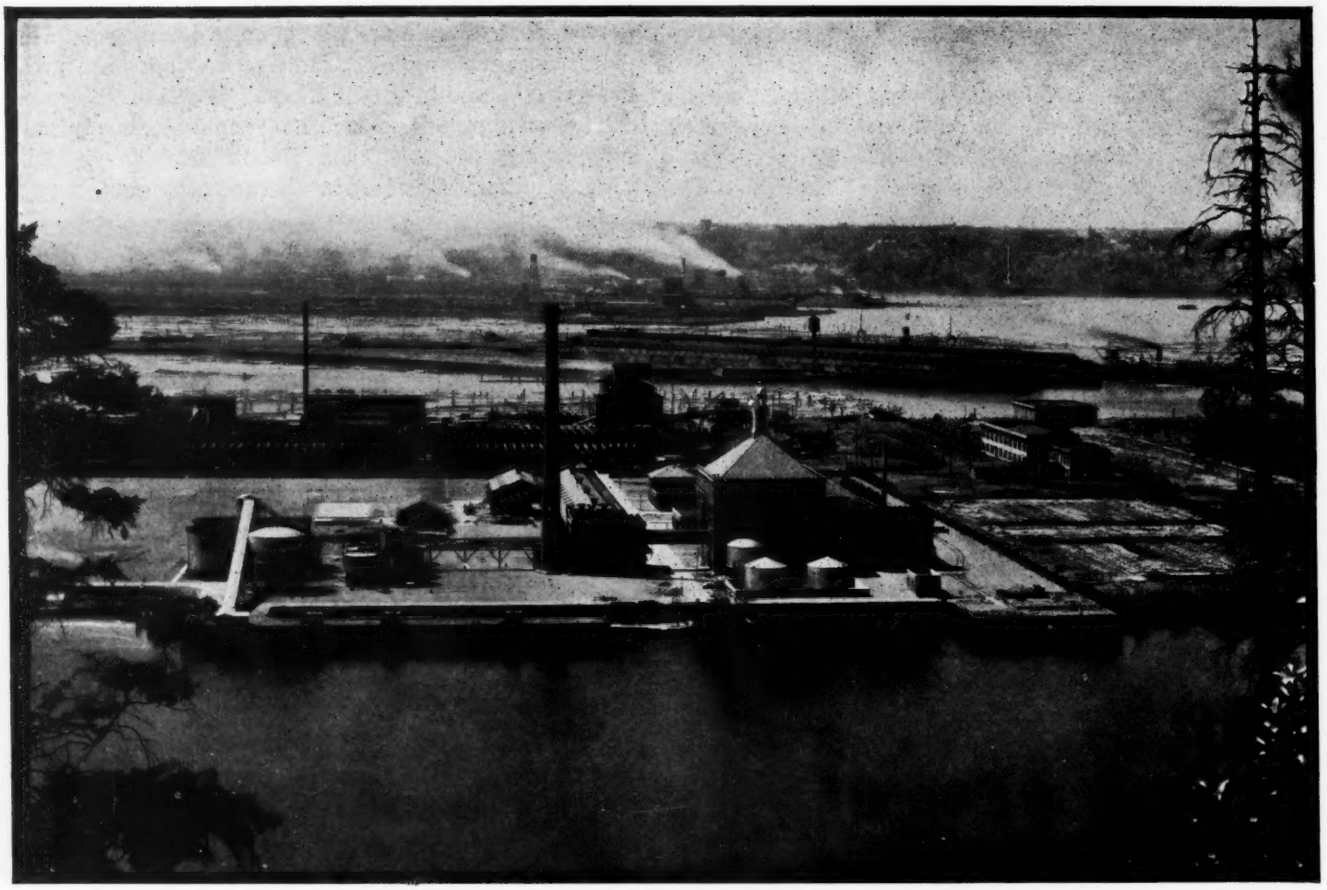
Finally, aluminum is becoming of rapidly increasing importance in building operations where light weight is of importance. A new, possibly temporary use, lies in the employment of the metal for exterior and interior decorative effects according to the modern mode.

New Hungarian Ammonia Plans

Nitrogen Fertilizer and Chemical Works with offices in Budapest, Hungary and plant located in Transylvania, Rumania, is, contemplating the construction of a new direct synthetic ammonia plant either in Hungary or Rumania with a daily capacity of 20 tons of anhydrous ammonia for conversion into fertilizer materials. The present plans call for an outlay of about $1,225,000.

The factory is located in the natural gas district of Transylvania, situated at Diciosanmartin, along the Blaj-Prajd railway.

Cyanamide fertilizers are now produced at this location from utilizing nitrogen obtained by burning natural gas under special boilers. The combustion gases, carbondioxide and free nitrogen, are purified and the carbondioxide as well as the other impurities eliminated. The plant employs the Polzenius process and has a total capacity of 37,500 metric tons of cyanamide a year. (Assistant Trade Commissioner Walter M. Slavik, Budapest, Hungary.)



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The Use and Operation of Standard Costs

By D. A. Wilcox, Chem. Eng.

THE profits of a certain large chemical company showed a very disappointing decline during the year and the president, after an investigation, ascertained that this was caused by a continuous increase in plant costs rather than by any decline in price or increase in cost of selling. Pursuing his inquiry further he found that in the case of two large orders, constituting over 40 per cent of the total sales, this condition was particularly true.

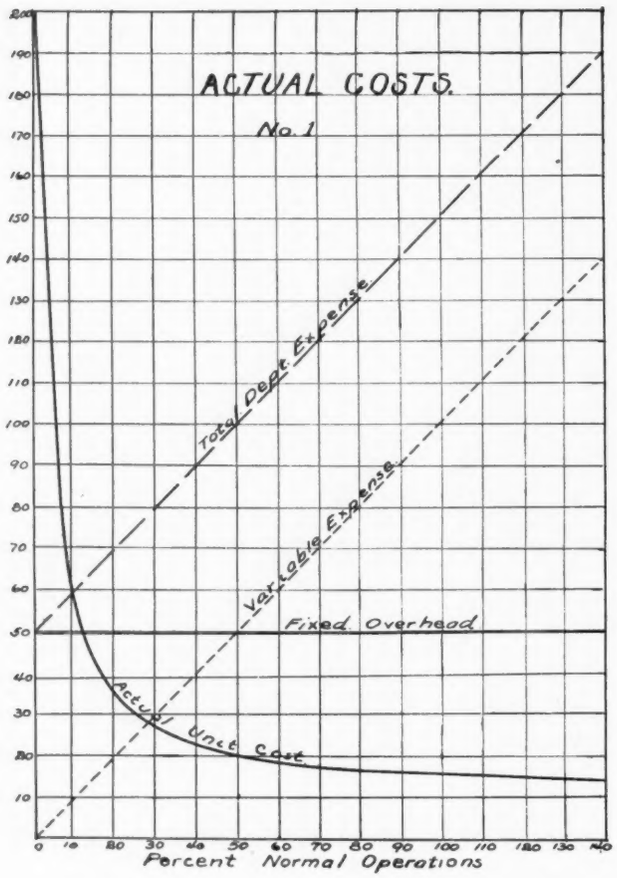
He had the costs of these orders analyzed in considerable detail so that he was able to place his finger on the exact points where the costs were high each month. The product consisted of certain raw materials which went through about ten converting operations and he found that in one month one operation would be high, another month another operation and so on, but that there was no particular consistency about it. All of this information pertained, of course, to past productions and the high spots varied so much from operation to operation that it was impossible to know just where to start a correction. Thus a study of what had happened was of very little value in preventing its repetition in the future.

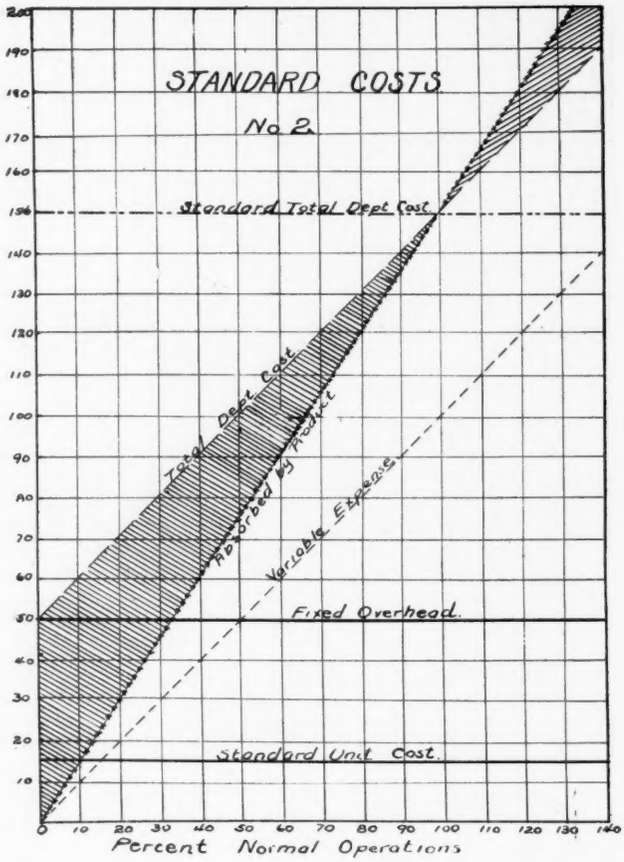
Need of a Definite Objective

It was then suggested that exact specifications be laid out for each step in the process. The operations were carefully studied and a daily record was made comparing the actual results for the day with the specifications to see how well the various departments were adhering to them. As soon as one started to vary, necessary steps were taken to bring it back into line. Thus every man in the plant had a definite goal and knew just what was expected of him. As a result of the interest aroused the specifications were not only beaten, but in a few months were revised to call for considerably greater efficiency. Costs declined and profits increased. The difference lay in the fact that instead of production being hit or miss each man now had a definite objective.

Actual vs. Standard Costs

This example illustrates the difference between "Actual Costs" and "Standard Costs." In one case the attempt is made to ascertain what the actual cost was, after the product is completed. Considerable time elapses before the results can be secured because all the operations must have been completed and all the expenses turned in and computed. Actual costs are at best historical costs or, as G. Charter Harrison terms them "retrospective costs." By the time they are computed and the results secured the damage is done and there is nothing to do but cry over the spilt milk. This is one great disadvantage to actual costs from an operating standpoint, but there are many other disadvantages.





These charts illustrate the differences between "Actual" and "Standard" Costs. In both cases we have taken a department having certain fixed overhead, set at "50," and variable charges which are assumed to increase in direct proportion to the percentage of the total capacity of the department utilized.

In the case of the actual costs all the expenses of the department are absorbed into the costs of the products themselves. This means that the unit cost of the product is the quotient of the total departmental expenses divided by the quantity of products made.

Such an actual cost takes the form of a parabolic curve with infinity at one end and approaching the unit variable cost at the other end. The curve in this particular case shows rather gradually increasing unit costs as the capacity utilized falls from 140 per cent of normal to about 60 per cent when the increase becomes more rapid. At about 30 per cent it mounts up very quickly. The exact shape of the curve will vary, of course, depending upon the ratio between the fixed and the variable expense but the principle is the same.

It may be seen, therefore, that such a cost is complex since in order to interpret it we must not only know the expenses and the quantities of products, but also the percentage of normal capacity utilized. At the very time when low prices must be set to attract new business costs are highest.

In the case of the standard cost chart the expenses are the same, but here we have inserted a line at 150 to represent the total cost of the department at normal operating capacity. The cost itself, being standard is set and remains fixed at 15. This represents at all times what the cost should be under normal conditions.

As the cost is fixed, expenses must be absorbed in some other manner. That portion absorbed by the product itself is the degree of operations times the unit cost and is shown by the starred line. The difference between this line and the total departmental cost at any capacity represents the loss due to decreased (or gain due to increased) capacity utilized. It is shown on the chart by the shaded portion and is a direct charge to profit and loss as a cost of doing business not properly chargeable to the product. Below 150 it is a loss and above 150 it is a gain. The "variance" charged off always shows the gain or loss due to operating at more or less than normal capacity.

Take the matter of aid to the selling policy. One object of costs is to aid in setting sales policies. However when we compute the actual costs of our products we necessarily divide all the expenses and overhead incurred during the period by the product. Thus if production falls off and overhead goes marching on, the costs immediately start to climb and the more production falls off the higher the costs are. When production declines, more sales are needed, but any attempt to base sales prices on the costs at such time would be disastrous and absolutely preclude any sales at all. Hence just at the time when they are most needed they are thrown out.

If actual costs are of little value from an operating standpoint, because the information received is too old to aid in correcting conditions, and if they fail when most needed from a sales standpoint the question arises as to what can be done. The answer is to devise a system that will give the desired facts promptly and which will show at all times what the costs would be under present conditions so far as prices of materials, labor and so forth are concerned but under normal conditions of operations. It has long been recognized that when a plant is partially shut down, a part of the overhead should be handled in a different manner, thus avoiding the effect of

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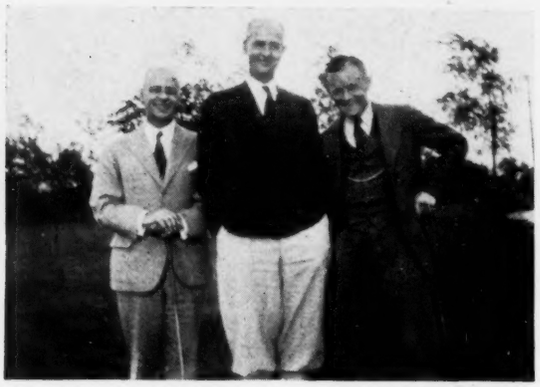
CHEMICAL

"Spring Fever" Epidemic

"Waiting at the tee": Leland Doan (Dow, Midland); Fred Lancaster (Diamond, Pittsburgh); Billie Haynes (Chemical Markets, New York) meet at White Sulphur Springs



An Isco threesome: Eben Speiden (vice-pres.), E. T. Ladd (chief chem.) and Gordon MacKelcan (sales mgr.)

From Wilmington—Warren Kinsman—du Pont

Two sales directors of the Cyanamid family: above Philip Dinkins (Kalbfleisch) and to left Miller Fargo (Calco)

John Boyer (vice-pres., Monsanto) shoots out of the rough, while (below) their president Edgar Queeny (right) goes coon hunting with Pres. Theodore Swann (Federal Phosphorous) on his Alabama estate

NEWS REEL

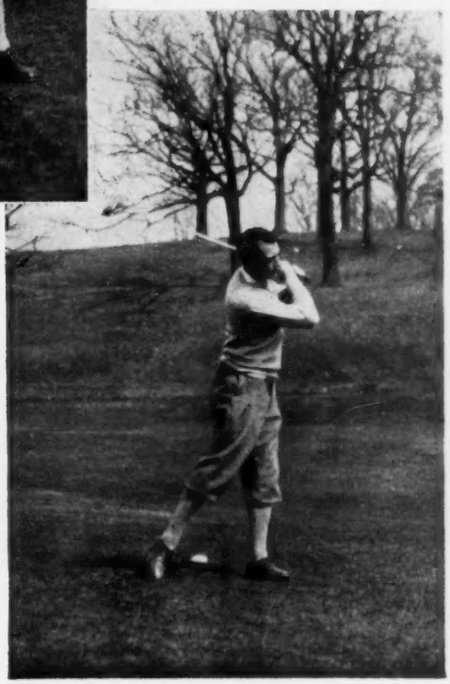
Hits Chemical Executives

What chance has this buyer, C. H. Morrison (Walton Leather, Baltimore) between two such chemical salesmen, Al. Sharwachter (A. Klipstein) and Eddie Orem (Grasselli). Below Leith Speiden (Innis Speiden) and Harry Mabey (Mathieson) are not discussing freight rates from Niagara Falls

From Boston—William M. Rand —treas., Merrimac

Two Mathieson executives "relax"— above, Bob Quinn, director of chlorine sales and in oval, Jack Kienle, vice-pres. in charge of sales

Above Arthur Orr (vice-pres. in charge of sales, Commercial Solvents, Terre Haute) has opened his 1930 season by turning in a card of 88. At right, Kenneth Klipstein (treas., E. C. Klipstein & Co.) who "breaks eighty" more frequently than most chemical executives, and with his brother Ernest is one of the industry's most formidable teams



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mounting costs. Some actual cost systems make an attempt to divert a portion of the overhead under such conditions.

Standard Costs

When, in the example cited at the beginning of this article, the accountant laid out specifications to be followed in making the products and calculated what the costs would be if these specifications were followed exactly, he prepared what are known as "Standard Costs." A standard cost system says in effect, "There are many differences of opinion as to what constitutes a cost. There is no doubt, however, that there is some *best* way to make each product, which can be determined if a careful study be made of the matter. Therefore the product *should* be made in this way and if so made should cost so much. We will outline these ways and figure the costs and such costs will be our standards of accomplishment. It necessarily follows that any deviation from these standards is not a part of the cost of the product but is due to operating inefficiencies (or conditions extraneous to the production of this particular product) and should not be reckoned as a cost of the *article* but as a loss due to deviations from standard procedure. Therefore, we will charge the product only with the standard costs and will tabulate the deviations and charge them off as a direct loss due to other conditions. We will consider our standard cost to be the true cost and the variations from the standards will tell us how much other conditions are affecting our profits—and where."

In a standard cost system, the costs are determined in advance and all efforts of the cost department are directed to finding out where and by how much conditions arise that prevent production at these standard costs.

It may appear that such a cost would be purely theoretical and bear but little relationship to the actual costs. But it must be remembered that the standards should be based on practical conditions and represent what the products really should cost. A typical example may help to illustrate how this works out.

Example of Standard Costs

Suppose we had a table factory. We have laid out carefully the specifications for a certain sort of table, a part of which calls for the use of pine for the drawers. Suppose now that one day the foreman of the drawer department finds that due to some carelessness there is a shortage of pine of the particular size he needs. Rather than hold up production he can substitute birch for a few days until a new supply of pine comes in and he does so, even though the cost of birch is higher than that of pine. Obviously the higher cost for those particular tables was the result of some mill inefficiency. It would not be fair, therefore, to penalize the tables with the extra cost entailed by using birch (as would be done in an actual cost system). Under the standard cost system, the cost charged for drawers includes pine only, the extra cost being charged off directly to profit and loss. Two things happen. In the first place the tables are charged only at a fair normal cost and secondly when the mill manager sees the special charge to P. &. L. for the use of birch he is immediately informed of the situation (not at the end of the month when the cost of the tables is analyzed) and he can take appropriate action at once. Maybe the standard cost is not the actual cost, but is it not far more useful both to the sales department and to the mill manager? Mind that if it were necessary to substitute birch for pine as a regular procedure the standard cost would contain a provision for this.

Standard Costs Based on Normal Conditions

It is stated that standard costs are based on normal conditions. The word "normal" used here refers to the degree of operations and should not mean merely the cost of doing business in the regular manner if the regular manner be found to be inefficient. Thus if an apparatus is normally operated eight hours per day for 310 days during the year this time will be considered as normal. If the plant normally runs 24 hours per day for 310 days that will be considered normal, but in the first instance the fact that the apparatus *could* run 24 hours per day, and does sometimes when the demand is great would not warrant using 24 hours per day as normal. If the normal method of operating is for 24 hours per day but overcapacity in the industry is such that the industry as a whole operated only at, say 80 per cent capacity then 24 hours by 310 days by 80 per cent would be considered normal for the plants in that industry.

In all other matters, such as material costs, labor costs, productions per unit of time and so forth the standards should be set on the best practical standards of operations. To do otherwise would defeat one prime purpose of standard costs, namely that of detecting and calling attention to inefficiencies.

Why Normal Operations Are a Fair Basis

It may be thought that standard costs based on normal operations would not be fair because "it is obvious that when production falls off costs go up," but do they?

There is an important distinction between the total cost of doing business and the cost of a particular product. Heavy expenses may be incurred which do go to make up the cost of doing business and yet not be a part of the cost of the product made. The loss due to shutting down is one of them.

Suppose we had two plants under two different subsidiary companies, one at Atlanta, and one at Dayton, each making the same product at the same cost per ton, let us say $50.00. Suppose now we shut down the Atlanta plant entirely but continue to operate the Dayton plant. Certainly the product

An Extension of Dorr Engineering in the Field of Wet-material Handling

Most plants in the Chemical Industries are faced with some problem in wet-material handling. Mixing, classifying, thickening, washing, filtering and similar operations are basic processing steps.

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made at Dayton still costs $50.00. Suppose now we move our Atlanta plant to Dayton and then shut it down. Still the product in Plant No. 1 at Dayton costs $50. The act of moving our other plant has not increased costs in the first one. To carry the illustration further we will suppose the two plants are incorporated into one. Still the product made in the half operating costs $50.00 per ton and there is a loss due to shutting down the other half. If we run the whole plant half time, shut down half we still get a cost of $50.00 while operating and a direct loss while down.

Carrying idle equipment is a cost of doing business but not a part of the cost of the products being made on the equipment which is operating. It will be seen, therefore that the method of basing standard costs on normal operations is not only fair but is the correct way to establish costs.

Standard Rates of Burden

How can we distinguish between the cost of producing at normal operations and the cost of shutting down ? This is done by what are known as "standard rates" which really mean the average normal rate per hour for operating the department. Thus we estimate as carefully as possible what it will cost to operate a department under normal conditions for the next year. Let us say that it will cost $10,000 to run a certain department for a year, each class of expense being shown separately to make up the total cost. We will further assume that the department should operate 1,000 hours during the year. It then follows that the cost of operating the department should be at $10 per hour. When the department is operating we charge the product with $10 per hour and when it is down we charge off $10 per hour for each hour down.

Suppose, however, that the actual expenses do not equal $10,000 for the year but cost $11,000. Well, they *should have* cost $10,000 and the extra $1,000 represents some inefficiency and is also charged off.

The loss due to loss of time we call "Unabsorbed Burden" and the loss due to excess expenses we call "Burden Variance" and the sum of the two are called "Unabsorbed Burden and Burden Variance."

Let us assume in our example that the costs are $11,000 and the department only ran 900 hours. We charge the product with 900 hours @ $10 per hour or $9,000. We charge off $1,000 as "Unabsorbed Burden" and we charge off $1,000 as "Burden Variance," a total of $2,000 charged off, and at all times the sum of what is absorbed by the cost of the product and the "unabsorbed burden and burden variance" exactly equals the actual expense.

We may run more than 1,000 hours in which case we have "Over-absorbed Burden" which is a credit to P. & L. (showing better than standard operations) and we may have actual expenses less than the standard, in which case we have a credit burden variance.

The under-or over-absorbed variance shows how nearly we came to the standard degree of operations and the burden variance shows how nearly expenses were held to the standards. As the standards and the actual expenses are classified into the various items of expense, such as fixed charges, labor, supplies and so forth, we can immediately tell just what caused the variance and this is a great aid in securing a control.

In an actual cost system if the costs are high they may be due either to low production, or high expenses, or both, and there is no way of telling which was the cause without considerable analysis. In a standard cost system the cost is always the same for any particular period (of course standards are revised as conditions change) but the variances tell at once whether operations were normal or not, and how far out the actual expenses were from the standards. We have the whole story at once without any need for further analysis.

Any deviations from the standards are called "variances." Thus in the case of our table factory the extra cost due to using the birch was a variance. Variances are expressed in dollars and cents and show the effect on profits of any deviations from standard procedure.

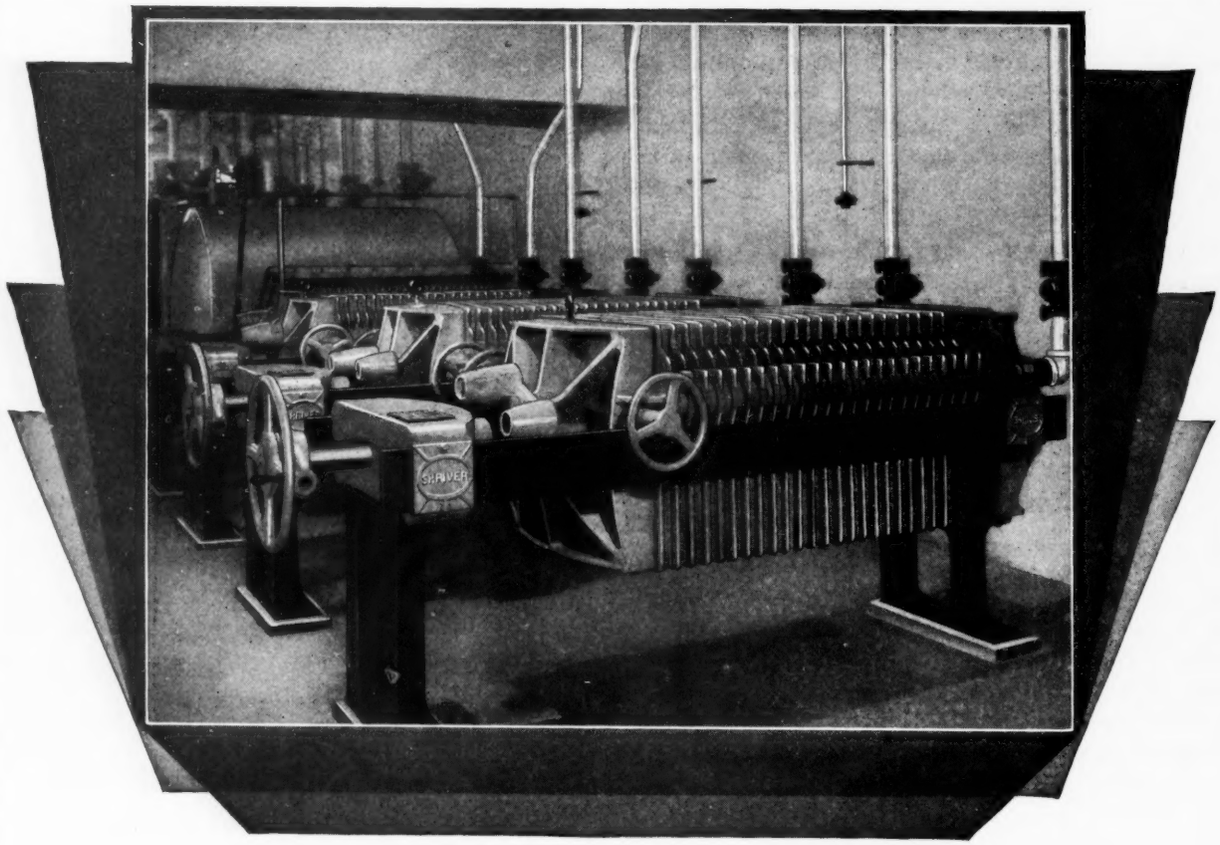
Standards and Variances as Time-Savers

The use of standards and the development of variances have a very beneficial result in conserving the management's time. In most cases things run along pretty much as they should and only a relatively few things actually require the management's attention each day, but how is the management to locate these things promptly enough to give them the attention they need in time to be of any use ? Obviously the mill manager cannot personally go over all of the figures each day and pick out certain ones to get after. By systematically comparing the results with standards daily and developing the variances the ones that are much out of line will immediately show up. In all other cases the variances will be credits or of negligible amounts. This is what is termed the "Principle of Exceptions" and is a wonderful aid in conserving the management's time and energy. They know that so long as there are no big variances there is nothing to worry about and that if anything does go wrong the variance will stick out like a sore thumb and can't be missed.

Standards a Check

For this reason as many factors as possible are standardized. The more completely the operations are standardized the greater aid the management gets from the costs and the surer the management is that nothing can "get by" it.

Variances may be developed for any desired condition of the operations. We can set standards for the cost of raw materials usages. By setting standard



SHRIVER FILTER PRESSES

IN THE chemical and chemical process industries many products are made possible only through the Filter Press. In this respect Shriver Filter Presses have contributed much, and, in addition, have aided greatly in the realization of quality and production economies of the output of industry throughout the world.

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prices we develop "price variances" which tell us at once when deviations from standard prices arise. By setting "Usage standards" we tell immediately when the standard usages are exceeded. If the actual cost for materials exceeds the standard we can tell whether it was due to variations in the price or in the use. By the use of these "price variances" we can tell at once, the moment the invoice arrives if we desire, how efficiently the purchasing department is holding to the prices set as standards and thus get a prompt check on the very first step in the manufacturing process. Similarly other variances can be set all along the line to act as automatic signals on any phase of the business the management desires to watch.

Setting the Standards

So far as possible the standards should be set after a careful study of the situation. Expense standards are usually set on the basis of past experience tempered by a careful consideration of future requirements. This should always be done in conjunction with the heads of the departments affected because it is a cardinal rule in standard costs that the man responsible for meeting them should be thoroughly familiar with all the details of setting them and, if possible, they should be his standards.

In the case of material standards for usages this is largely a technical problem and the standards are set with the best available data as regards yields both chemical and actual, that is to say the first step is to take the chemical yields as a base and then modify them in accordance with what past experience shows to be practical. Labor standards and standards involving a time element are best set on the basis of actual time studies.

Checking the Standards

In many cases, especially in new installations, there are very meager records to go on and the best possible estimates must be used. This makes the problem somewhat more difficult, but not impossible, for even if the estimate be wrong the variances will quickly show it up by being constantly on the same side. When this occurs, especially at first, there is always the suspicion that the standards rather than the performance is at fault, but the mere act of setting standards and constantly comparing actual results with them very quickly gives the necessary records on which to set the standards accurately. It frequently happens that the first year of a new standard cost system is one of trial and error to ascertain the means of setting standards correctly. As time goes on, however, the standards become more and more firmly intrenched until after a few years any variation from the standards will carry a real tangible meaning to the management and from then on there is no question as to the utility of the system.

New Plant Construction

Sodium sulfate plant is being constructed at Ormiston, South Saskatchewan, by the Horseshoe Lake Mining Co. It is expected to be operating by June, 1930. This company is reported to be backed by American capital and to have a long term contract to supply some 36,000 tons annually of sodium sulfate to the International Nickel Co., besides large quantities to an American chemical plant.

Merrimac Chemical Co. plans early rebuilding of portion of Everett, Mass., plant recently destroyed by fire with estimated damage of $500,000. A group of new units will be built to replace eight former structures, three-and four-story, damaged by the fire with cost estimated at approximately the amount of the fire loss.

General Salt Co., Los Angeles, purchases tract of land at Huntington Beach, near Los Angeles, as site for new plant for production of iodine and salt products. Initial unit will be one-story and estimated to cost about $70,000 with equipment.

American Potash & Chemical Co. plans extensive additions to Trona, Calif., plant consisting of new power plant, additions to potash and borax plants and to the village. Improvements will involve expenditure of about $4,500,000.

Geigy Co., dyestuffs, Jersey City, N. J., plans erection of new five-story addition to plant to cost about $100,000 with equipment.

Du Pont Cellophane Co. plans construction of new plant at Richmond, Va., the initial unit of which will cost about $4,000,000 and be in operation about January 1.

Union Carbide & Carbon Corp., plans erection of one-story addition to Niagara Falls plant, to be used as a warehouse and to cost about $25,000.

Twining Laboratories, Inc., Fresno, Calif., plans construction of two-story plant addition reported to cost approximately $50,000 with equipment.

Rose International Chemical Co., Stockton, Calif., plans erection of new one-story plant unit with smaller structures, reported to cost about $80,000.

W. H. Monsarrat, Inc., Memphis, plans erection of plant for manufacture of chemical specialties at estimated cost of $40,000.

United Color & Pigment Co., Newark, plans new one-story plant addition estimated to cost over $35,000 with equipment.

Atmospheric Nitrogen Co., plans construction of second unit of Hopewell plant, estimated to cost $20,000,000.

Canadian Industries, Ltd., plans construction of $500,000 explosives plant near Selkirk, Man.

U. S. Gypsum Co. plans construction of new plant in Youngstown, Pa., district.

Chemical Fertilizer Co., Rendsburg, Germany, reduces capital by one-half to eliminate unprofitable activities pending improvement in volume of chemical business.

National Association of Purchasing Agents will hold fifteenth annual convention at Stevens Hotel, Chicago, June 16-19.

Thirty-seventh Chemists' Exhibition will be held in London, May 26-30.

Pure PHTHALIC ANHYDRIDE

FLAKE OR CRYSTAL

For over twelve years, buyers have been specifying *"Selden Brand"* PHTHALIC ANHYDRIDE, confident of its uniform quality and exceptional purity.

You can obtain *"Selden Brand"* PHTHALIC ANHYDRIDE in either Flaked or Crystal form. The Flaked is packed in barrels of 250 pounds net and the Crystal in barrels of 150 pounds net. All barrels are paper lined.

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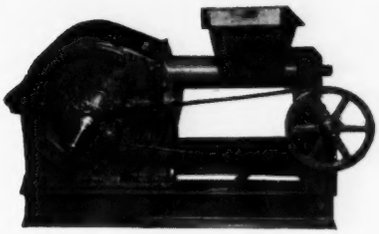


A light duty grinder

The Hammer Mill

By Max Mosher

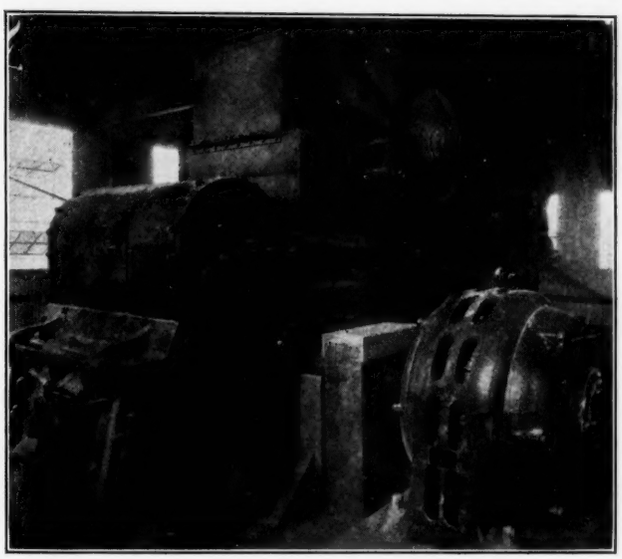
New York District Manager, Gruendler Crusher & Pulverizer Co.

OF GRINDING or pulverizing machinery there are many types. Among them the hammer mill is distinguished by its extreme flexibility and universality of application.

It has been advertised as the "universal mill" and sold as the cure-all for every pulverizing trouble. It has been abused, improperly sold, poorly built, yet if properly designed and installed it remains one of the best mills in its field.

In general the hammer mill may be divided into two classes: the heavy duty, which may be either a preliminary machine or a finishing machine; and the light duty machine, most generally used for making a finished product.

The nature of the heavy duty machine tends to keep the cost of repairs and replacements as low as possible. It may be used for secondary crushing of cement, rock or crushing of limestone for road or fertilizer use, reduction of coal for stoker or coking purposes, preliminary crushing of mica, clays, short fibre asbestos rock, saggers, waste roofing, refractories, and also on green bone and fat, oil, cakes, meat scrap, baled cork and wood.



A heavy duty pulverizing machine equipped with tramp iron catcher and roller bearings

Crushing these materials will wear the hammers and grate bars, and the mill must be fully lined to protect the castings. In addition to these general features, for best operation the mill should be equipped with heavy duty roller bearings, the grate bars should be replaced as individual bars, and the casings so arranged that it is easy to remove the entire rotor for balancing or extensive repair in case of accidental damage. Hammers may be of either the ring type or the special straight type depending upon the work to be performed. This mill usually operates at a peripheral speed from about 9,000 to 11,000 feet per minute for the hammers. In many cases it is equipped with a device for the removal of tramp iron. A good feature of the hammer mill is its general freedom from serious damage due to tramp iron or other foreign materials.

Two General Types of Mill

The light duty hammer mill is generally a high speed mill operating at a peripheral speed of from 14,000 to almost 20,000 feet per minute. There are two general types, those that use air conveying from the grinder and those that do not. The applications are somewhat different for each type of mill although for certain uses they are interchangeable.

These machines are successfully grinding all types of soft and semi-soft materials. They are not recommended for abrasive materials, as a rule, although mica grinding is very successfully performed on these machines. A few of the materials most generally

Now in 100 lb. Multi-Wall Paper Bags— Light 58% Soda Ash

Another forward step in a program of constant improvement---Wyandotte Soda Ash now comes in multi-wall paper bags. Multiple wrappings end the old dust nuisance. No Soda Ash sifts out---it can't.

The new 100 lb. size handles easier, quicker. You save time, labor. Guaranteed dust-proof, leak-proof, break-proof, moisture-proof.

Michigan Alkali Company is the first Soda Ash manufacturer to successfully use this method of packing Soda Ash.

"Distinguished for its high test and uniform quality"

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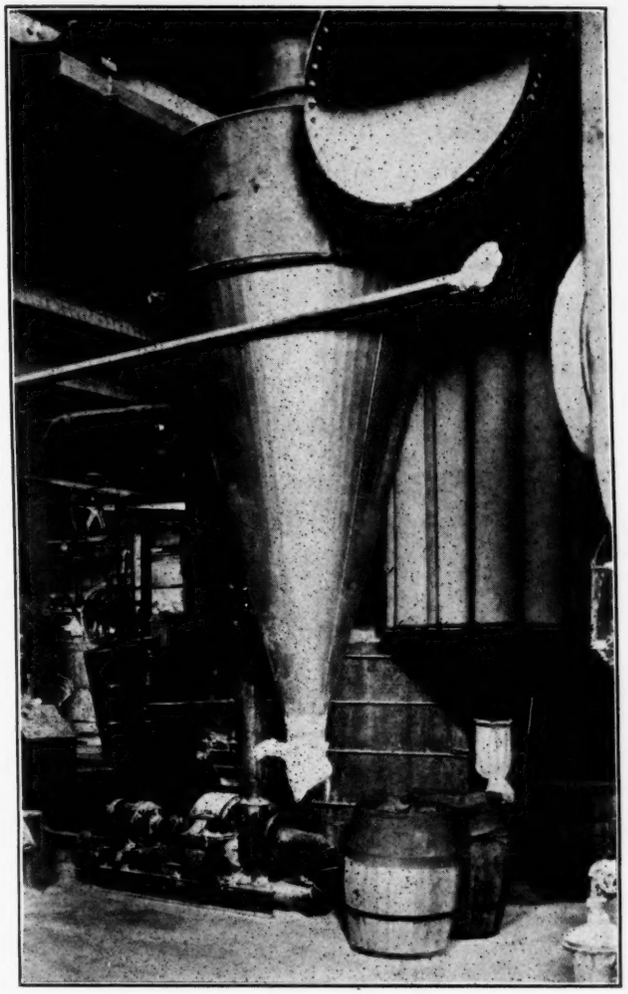
NOTE NEW ADDRESS : Our new location in New York is at 10 East 40th Street— just across the street from where we were and a few steps nearer Fifth Avenue

ground are chemicals, intermediates, dyes, colors, gums, wood, cork, feed, moulded products, fertilizer, guano, paper, spices, soap powder, etc. From the above varied list one can readily see why this type of machine has been called 'universal'. However, great care must be used in choice and arrangement of the mill for the specific work. Many cases of failure have been due to improper arrangement of the equipment. There are several variables and a proper knowledge of the different relations is necessary to secure correct and efficient operation.

A well designed high speed hammer mill arranged with air should have easily replaceable hammers and screens. The fan should be mounted on the shaft of the mill, the fan casing should be easily opened to remove the fan wheel. The top half of the hammer mill should have replaceable breaker or grinding plates, with the rotor mounted on ball bearings, and carefully balanced. An efficient cyclone collector is necessary and often a dust collector should be used. In general when the material to be ground is soft with a tendency to stick, if it heats, or if it is not free running, the air conveying system should be used in conjunction with the hammer mill. On this machine such products as stearates, intermediates, gums, soap powders, are successfully handled.



A typical grinding machine such as is used in the manufacture of stearates and all products which tend to heat or stick

The Air-Tight Hammer Mill

There are times when a new type of hammer mill which is completely air-tight and fed thru the air-tight feeder may give very fine results. This type of mill has a peripheral speed of at least 14,000 feet per minute. The casing must be completely air-tight; the shaft should be bushed; and the ball bearings should be independent of the shaft bushing. The reason for this requirement is that the bushing may leak after a time and then the material may sift into the bearings. Accessability of parts is most valuable.

Criticism of the hammer mill often states that it requires more power than attrition and cage machines. In making such a statement the comparative fineness of finished product is apt to be completely forgotten. It is well known that a hammer mill will grind a more uniform product than does either the attrition or cage mill. Therefore, to make a true comparison, the result must be taken into account. If this be done, it will be definitely shown that the hammer mill will grind at least as efficiently as either of the other mills and, in addition, produce a finished uniform product without the use of screens or other auxiliary equipment.

If a disintegrator action is wanted on a hammer mill it is easy to use a large screen in the mill and in this way get complete disintegration with great capacity. Finished material as fine as 200 mesh may be produced. In no other mill is it possible to make as large a reduction in one operation as in the hammer mill. Limestone is readily pulverized for agricultural purposes from three or four inch pieces to 50-75 per cent passing 100-150 mesh.

Improper installations may prove very costly as is shown by the case of a large manufacturer of pottery, who a number of years ago installed a hammer mill for the grinding of his sagger pots. After a year's use it was found that the machine cost about fifty-one cents per ton to operate. Upon investigation it was found that they had installed a high speed unlined hammer mill which quickly wore thru at the casting and was excessive in cost of hammers and screen. A heavy duty machine was installed and a guarantee of not over 1.5 to 2 cents per ton was made. In actual operation the cost proved even less. In another case, for the grinding of fish meal a manufacturer had installed a slow speed heavy duty machine which proved improper because the finished material was not fine enough and the grinder clogged. This was replaced with a high speed whirl-beater machine with air conveying. The machine was satisfactory from the first day of operation.

Several years ago one of the manufacturers of stearates used a beater type of grinder which gave very low capacity and continually clogged. This

1846

Isaac Tyson, founder of the Bichromate Industry in America was one of the first to realize the necessity for rigid chemical control and industrial research.

In 1846, one year after the opening of the Baltimore works, Tyson applied to Yale College for a chemist and a Mr. (later Professor) Blake was employed.

The Mutual Chemical Company of America has faithfully followed the principles of Isaac Tyson and on the site of his original factory today stands the largest Bichromate plant in the world.

Bichromate of Soda

Bichromate of Potash

Chromic Acid

Oxalic Acid

Factories:
Baltimore **Jersey City**
Mines:
New Caledonia and South Africa

machine was replaced with a high speed hammer mill with cyclone and dust collectors. The results were so satisfactory that two additional machines were bought. In another case an attrition mill, grinding guano, was replaced by a hammer mill. It had been the practice at this plant to have a man watch the feed of the attrition mill so as to remove feathers which balled up in the mill and cut down the capacity. With the hammer mill this was unnecessary since the machine ground the feathers also. In a recent analysis of performance of a heavy duty machine crushing cement rock it was found that the total cost per ton including fixed charges, repairs, power, and labor was 1.65 cents per ton (Nielson Survey GD-60-HZ.)

Such instances may be cited without end but all may be resolved in the statement that properly installed and properly used a hammer mill is one of the most efficient and best types of reduction machines obtainable.

Oskar Mosebach, A. G., Germany, is merged with Duco Lackfabrick A. G. Former concern, originally a subsidiary of Oberkoks Chemical Works, is half owned by E. I. du Pont de Nemours & Co., Inc., and holds exclusive rights to manufacture and sell lacquer products under du Pont patents.

German benzol cartel, Benzol Verband, Bochum, Germany, announces price advance for benzol in Germany amounting to three pfennigs per litre, effective May 1. Advance is direct result of recent tariff on benzol imports.

I. G. Farbenindustrie closes Moscow offices and withdraws its agent from Russia. Company failed to renew contract with the Soviet government a few months ago.

Imperial Chemical Industries, Ltd., arranges two-year credit to Soviet Russia to permit purchase of fertilizers, dyes, half finished products and metals to extent of £3,000,000.

New Incorporations

Beguiristain Molasses Sales Corp.—J. Krinsky, 11 Park Place, 200 shs com.

Sani Douche Co., chemicals—J. E. Raskin, 1440 Broadway, 100 shs com.

American Organic Fertilizer Co., Dover, Del. operate laboratories, fertilizer and insecticide manufacturing plants—Melvin Hopkins, Dover, Del., 20,000 shs com.

Florida Natural Gas Corp., New York City—Prentice Hall, Inc., of Delaware, Dover, Del. 100 shs com.

Dormont Laboratories, Inc., Philadelphia, Pa., chemicals—Corporation Guarantee and Trust Co., 2,000 shs com.

The Peoria Corp., New York City, deal in alcohol and spirits in accordance with the law—Corporation Trust Co., 1,000 shs com.

General Oxygen and Equipment Corp., Jersey City, manufacture oxygen containers, etc.—Corporation Trust Co., Jersey City, 200 shs com.

Cellulose Corp. of America, Wilmington, Del., cellulose products Corporation Trust Co. of America $1,000,000.

The Coyle Co., Wilmington, Del., boiler cleaning materials—Corporation Trust Co. of America, $1,000—10,000 shs com.

Richard Chemical Co.—A. Elk, 562 5th ave., $20,000.

The Clifton Hogshead Chemical Corp., Norfolk, Va., $150,000.

American Disinfecting and Exterminating Co.—Vogel & Whymann, 239 Broadway, 100 shs com.

The Lincoln Laboratories Cor., Paterson, chemicals—B. P. Galanti, Lodi, $125,000.

Appledoe Corp. of America, Ltd., New York City, chemicals, drugs, medicines—U. S. Corp. Co., 2,000,000.

John Lucas & Co. Inc., Wilmington, Del., paints, varnishes—Corporation Trust Co. of America, $4,284,800.

Vel-Ve-Tone Hygenic Co., chemicals—P. J. Daly, 189 Neptune ave., $20,000.

American Pelliphilo Corp., Wilmington, Del., alkalis, chemicals—Corporation Service Co., 1,000 shs com.

Peck & Sterba, chemicals—Moffat & Sanford, 342 Madison ave., 100 shs com.

Wasserman Institute, Inc., Wilmington on Del., chemicals—Corp. Service Co., 1,000 shs com.

All-Nu Products Co., Wilmington, Del. insect powder—The Corp-Trust Co., 250 shs com.

Wildamus Corp., Belleville Del. chemicals—Registrar and Transfer Co., 40,000 shs.

Steel Castings Development Bureau, Inc., Philadelphia, Pa. chemical N. T. Booth, New Castle, Del., 1,000 shs.

1929 Imports of Intermediates Set Record Value of $1,646,135

In 1929 the value of the United States foreign trade in coal-tar intermediates amounted to over $2,000,000. This figure marks the peak in the rather steady ascensional trend which this trade has been registering during the last four years. The tendency has been for the import phase of the trade to secure an increasing preponderancy over the export. In 1923 imports were more than double exports, whereas in 1929 imports were four times as great. The principal markets and sources are set forth in the following tables:

	Exports		
	1927	*1928*	*1929*
Japan	$84,404	$93,449	$168,808
Canada	49,120	116,513	107,825
United Kingdom	1,935	1,223	33,730
Netherlands	47,175	26,799	26,213
China	832	1,450	17,948
Mexico	3,225	12,534	13,367
Cuba	11,959	2,377	8,294
Australia	24,052	5,565	7,954
Belgium	348	1,568	5,826
Others	125,426	54,399	28,033
Total	$348,476	$315,877	$417,998

	Imports		
	1927	*1928*	*1929*
Germany	$963,015	$1,043,020	$1,374,750
United Kingdom	65,242	188,728	149,148
France	44,616	42,903	60,541
Switzerland	37,360	40,627	42,181
Netherlands	7,095	10,496	14,618
Others	28,247	778	4,897
Total	$1,146,575	$1,326,552	$1,646,135

I. G. der deutschen Kali-Industrie G. m. b. H., newly formed in Germany, capital 300,000 marks, centers interests of the four newly restored potash by-product syndicates, namely for rock salt, magnesium sulphate, bromine and magnesium chloride.

Producers involved and their probable production quotas of salt and bromine, follow:

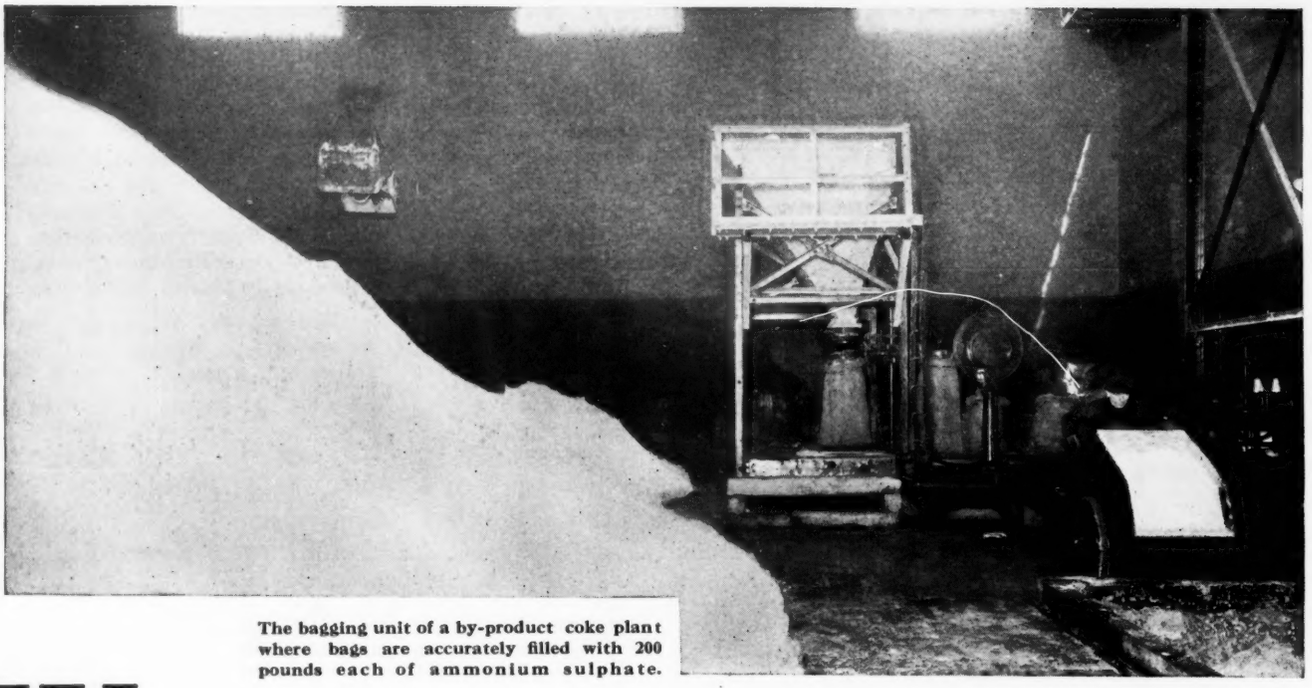
	Rock Salt (*Per cent production quota*)	*Bromin* (*Per cent production quota*)
Salzdetfurth	31	35
Wintershall	22	11
Burbach	21	24
Preussag	10	18
Kali-Chemie	7½	

Approximate values of annual production of these by-products of potash are given as follows, reports the Department of Commerce:

	Marks
Rock salt, 1,900,000 metric tons	21,000,000
Bromine, 2,000 metric tons	4,500,000
Magnesium chloride 75,000 tons liquor and 25,000 tons solid	3,700,000
Bitter salts, 150,000 tons	4,500,000

Spain exported $893,400 worth of potash salts to the United States in 1929. These exports have increased markedly since 1926 when the total value was $24,700. Further expansion of the Spanish potash industry is expected to follow this opening of the Cardona mines in the Province of Barcelona.

The annual production quota for potash in Spain during 1930 has been set by the government at minimum 40,000 metric tons and maximum 180,000 metric tons, according to a cable to the Department of Commerce from the commercial attache, Madrid. The price set is 250 pesatas per ton of 80 to 85 per cent muriate. Exportation is to be allowed when domestic needs are satisfied, the export price to be one per cent above the preceding month's domestic prices.



The bagging unit of a by-product coke plant where bags are accurately filled with 200 pounds each of ammonium sulphate.

Where AMMONIUM SULPHATE can be used IT PAYS to use BARRETT STANDARD

KNOWN the world over for its extensive use as a source of nitrogen in agriculture, Sulphate of Ammonia more and more is finding a place in industry.

As a fire-proofing material for woods, fabrics and other inflammables, the value of ammonium sulphate is well recognized. Paper manufacturers, color makers, dyers and producers of fine chemicals are among the scores of industrial concerns using Barrett Standard Sulphate of Ammonia.

If you can use ammonium sulphate in your manufacturing process, be sure to buy—Barrett Standard. It has a guaranteed analysis of 25 per cent ammonia, and is shipped in 200 lb. net, even weight bags.

The Barrett Company

40 Rector Street New York, N. Y.

Sulphate of Ammonia

Chemical Facts and Figures

Consolidated Chemical Formed By Newport and Int. Printing Ink

New Company Consolidates Chemical and Dyestuff Division of Newport Co. with International Printing Ink Corp.—Assets of New Company Exceed $25,000,000—A. A. Schlesinger to be Chairman of Board and John M. Tuttle, President.

Newport Co. and International Printing Ink Corp. announce plans for formation of Consolidated Chemical Corp. to consolidate the chemical and dyestuffs division of the Newport Co. with the International Printing Ink Corp. The new company would have authorized capitalization of 350,000 shares of cumulative preferred stock of $100 par and 2,000,000 no-par common shares, of which there would be outstanding upon completion of the plan 119,239 shares of preferred stock and 657,844 shares of common stock.

Shares of the new company would be exchanged for stock of International Printing Ink Corp. on the following basis: one share of 6 per cent cumulative preferred stock, series A of the new company, for each 6 per cent cumulative preferred share of International; 1.4 shares of common stock of the new company for each common share of International; a detached warrant for the purchase of 1.4 shares of common stock of the new company at $45 a share, expiring June 1, 1935 for each subscription warrant (now or originally attached to International preferred shares) for 1 common share of International at $60 per share, expiring June 1, 1931.

The Newport Co. will receive in exchange for the outstanding shares of the Newport Chemical Corp. 46,688 shares of preferred stock, 255,645.8 shares of common stock and warrants for 32,677.2 shares of common stock of the new company.

Consolidated Chemical Corp. will have assets exceeding $25,000,000. Net earnings of the properties to be combined, available for dividends, totaled $3,500,000 in 1929.

The Newport Co. was formed in 1919 and has three manufacturing plants producing more than 375 chemical products, including dyestuffs and their intermediates, perfume bases, hydrogenated products, detergents, photographic, pharmaceutical and other fine chemicals.

International Printing Ink Corp. is the largest manufacturer in the United States of printing inks and allied products, and through Ault & Wiborg Varnish Works, Inc., conducts a substantial business in manufacture of varnish, enamel and lacquer, marketed directly to industrial users.

Terms of the proposed consolidation call for the acquisition by the new corporation of all or the major part of the outstanding securities of the International Printing Ink Corp. and all the stock of the Newport Chemical Corp. which is to be formed under the laws of Delaware to acquire all the business and assets of the dyestuffs and chemical business of the Newport Co. The latter will continue in existence, retaining its wood distillate division.

A. A. Schlesinger, president, Newport Co., will probably head the consolidated company as chairman of the board of directors and John M. Tuttle, president, International Printing Ink Corp., will become president of the new company.

Ethyl acetate denaturing formula, effective June, is ordered changed as follows: to every 100 gallons of ethyl acetate shall be added one-eighth gallon of petroleum product known as calol ethate or a product similar thereto in all respects including that of denaturing value.

Standard Oil Forms Hydro Patents; Plans Further Chemical Expansion

Hydro Patents Co. is organized with exclusive rights to license the hydrogenation process in the United States, which process is owned by the Standard I. G. Co. Hydro Engineering & Chemical Co. is also organized to manufacture catalysts to be supplied to licensees and to furnish licensees with the technical knowledge of the Standard Oil Co. of New Jersey and the I. G. Farbenindustrie, relating to the hydrogenation process.

Imperial Chemical Industries, Ltd., announces that it has practically concluded an agreement with the Standard Oil Co. of New Jersey and the Standard I. G. Co., through the latter's subsidiary, Hydro Patents Co., for use of the hydrogenation patent. It was also announced that the company had concluded agreements for the regulation of nitrogen production and sales over a considerable period with the I. G. Farbenindustrie.

Standard Oil Co. of New Jersey is also reported to be preparing to take an important position in industrial chemical field. Company is now spending more than $300,000 in erection of laboratory to increase chemical facilities at Bayway, N. J., according to Edgar M. Clark, director in charge of chemical production. It has also been reported that the company has entered a working agreement with I. G. Farbenindustrie for use in this country of their chemical patents.

Salesmen's Association Announces Schedule of Golf Tournaments

Salesmen's Association announces schedule of 1930 golf tournaments as follows: May 20, Canoebrook Country Club, Summit, N. J.; July 22, Fox Hills Golf Club, Staten Island; August 12, Lenox Hills Golf Club, Farmingdale, L. I.; and the final championship tournament, at a date to be announced at Briarcliff Lodge, Briarcliff Lodge, N. Y. Entry fees for the first three tournaments will be five dollars and prizes will be awarded on the basis of 18-hole play. For the final tournament the entry fee will be ten dollars, and prizes awarded for 36-hole as well as 18-hole play. Grant A. Dorland is chairman of the committee in charge.

Carbide & Carbon Co. Begins Synthetic Alcohol Manufacture

Carbide & Carbon Chemicals Corp. begins full-time commercial operation of new synthetic alcohol plant at Charleston, W. Va. Plant will be subject to a production quota fixed by the Bureau of Prohibition on basis of orders company is able to show. Plant capacity is about 7,000,000 or 8,000,000 gallons per year. Sales of the output in excess of about 2,000,000 gallons required for the use of the company and its associates will be handled by U. S. Industrial Alcohol Co.

Cyanamid Expands Calco Co.

American Cyanamid Co. announces acquisition of Wetterwald & Pfister Co., Wettersol Dyestuff Corp., and Dye Products & Chemical Co., and the consolidation of their businesses with that of the Calco Chemical Co., Inc. These companies have specialized in vat colors and form the nucleus for the vat color department of the Calco company, which has announced removal of its offices to 286 Spring st., New York.

STAUFFER
CHEMICAL COMPANY

CARBON
TETRA
CHLORIDE

CREAM OF TARTAR

CAUSTIC SODA

SULFUR GROUND REFINED

BORAX

CARBON BISULFIDE

NITRO CELLULOSE

ACIDS

SULFURIC
NITRIC
MURIATIC

TARTARIC
BORIC
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HOUSTON, TEX. ~ NEW YORK, N.Y. ~ CHICAGO, ILL.
713 PETROLEUM BLDG. 2601 GRAYBAR BLDG. CARBIDE & CARBON BLDG.
SAN FRANCISCO, CAL. ~ LOS ANGELES, CAL.
624 CALIFORNIA ST. RIVES-STRONG BLDG.

Personal and Personnel

C. D. Prickett, vice-president and director, Hercules Powder Co., is the guest of honor at a dinner given April 2, by Russell H. Dunham, president of the company, in honor of the former's completion of fifty years of service in the explosives industry. For the past eighteen years he has directed the black powder operations of the company.

John Cannon, one of the workers at the Gray's Ferry plant, E. I. du Pont de Nemours & Co., is honored at a dinner and reception tendered to him, April 5, in recognition of his completion of fifty years of service with the company.

Lord Birkenhead, one of the directors of Imperial Chemical Industries, Ltd., former Secretary of State for Idnia, and one of the most powerful figures in British politics, is convalescing at Biarritz, France, from the effects of a broken blood vessel.

Albert E. Cleghorn, representing Foster Dee Snell, is transferred to Travatex Products Corp., Newark, to take charge of manufacture of "Travatex," artificial travertine marble used in building industry.

James G. Vail, chemical director, Philadelphia Quartz Co., will address the annual convention of American Pulp & Paper Supterendents' Association, to be held in Philadelphia, May 31, on the subject of silicate of soda in the paper mill.

Dr. J. G. Davidson is appointed general sales manager, Carbide & Carbon Chemicals Corp. W. F. Reich, Jr., is appointed assistant general sales manager and continues as manager, "Pyrofax" domestic gas sales.

William Wilke, at one time chief engineer, Gray's Ferry Chemical Works, Philadelphia, dies in Buffalo, April 4, aged 75. He had been a consulting chemical engineer in that city since his retirement from service with the Philadelphia company.

Dr. Gustavus J. Esselen, Jr., a principal in the firm of Skinner, Sherman & Esselen, consulting chemists, Boston, is editorial director of a new monthly magazine, "Cellulose."

J. R. Schmertz, since 1922 director of publicity, Mathieson Alkali Works, Inc., is elected second vice-president, Technical Publicity Association.

T. H. Bissell, International Nickel Co., is elected a representative of the active membership on the executive committee, Technical Publicity Association.

Nils Falk, secretary and treasurer, Vanadium Corp., dies in Salisbury, South Rhodesia, South Africa, where he had gone on business, April 21, aged 50.

Dr. Bueb retires as president, German Nitrogen Agreement, to become chairman, advisory committee, succeeding Dr. Hasslacher. Dr. Oster succeeds Dr. Bueb as president.

William Holmes Teas, chemical engineer expert in tanning and paper-making processes, dies at Annapolis, Md., April 28.

George E. Taylor is elected vice-president, John C. Wiarda & Co., a division of the Kalbfleisch Corp.

J. B. Weisel is appointed director of sales and development, cellulose products department, Hercules Powder Co.

New Jersey Chemical Dealers Held For Alleged Alcohol Diversion

Curtis R. Burnett, vice-president and treasurer, American Oil & Supply Co.; William Ulrich, secretary, American Oil & Supply Co.; George N. Bick, owner, Essex Chemical Co.; Benjamin L. Mueller, owner, Doubler Chemical Co.; and Benson Leister, owner, Duralac Chemical Co.; all of Newark, N. J., and vicinity are among thirteen arrested April 24, by United States marshals, operating under the authority of indictments handed up in Buffalo, March 25, in connection with an alleged liquor ring centering in that city. A hearing was set for May 14 in Buffalo, but Federal Judge William Clark, before whom the defendants were taken, informed the agents that he would not permit their removal to Buffalo unless the government produced at removal hearings direct evidence connecting them with the ring.

Curtis R. Burnett, who is a former president of the Newark Chamber of Commerce, issued a statement on behalf of himself, William Ulrich, and the American Oil & Supply Co., all of whom were named in the indictment, in which he bitterly criticized the manner in which the prohibition authorities had proceeded.

He declared that the concern has been in business for thirty-five years as a sales agent for various chemicals and that ever since the inception of prohibition it has made every effort to abide by the treasury regulations governing industrial alcohol. He said that the company has stopped selling its products to any customers under suspicion by prohibition agents. He added that he and Ulrich would gladly have waived immunity and gone before the grand jury which indicted them, but they received no opportunity to do so.

Industrial Chemical Sales Co., Inc., New York, issues a new 35-page booklet entitled, "Activated Carbon—The Modern Purifier," describing properties and uses of this material. Copies will be furnished upon request.

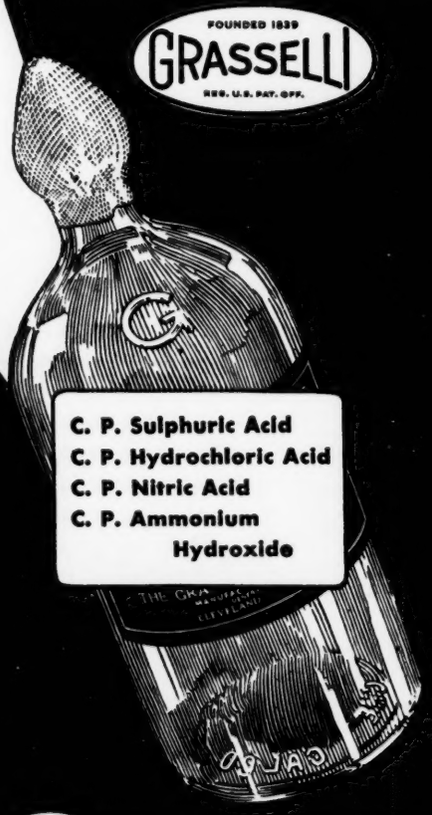
TESTING HIM FOR WITCHCRAFT

DUCK HIM AGAIN. HE'S STILL ALIVE!
THERE MUST BE SOMETHING WRONG WITH HIM IF WE COULD ONLY FIND IT.
TARIFF
SENATE INVESTIGATIONS
BUSINESS PROSPERITY

—Ding in the N. Y. Herald-Tribune

Strictly Chemically Pure

CP



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New York Office and Export Office: 347 Madison Ave.
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Birmingham	Cincinnati	New Haven	Pittsburgh	
Boston	Detroit	New Orleans	St. Louis	
Brooklyn	Milwaukee	Paterson	St. Paul	

Los Angeles, 363 New High St. • San Francisco, 576 Mission St.

GRASSELLI GRADE
A Standard Held High for 91 Years

News of the Companies

Sylvania Industrial Corp. Fredericksburg, Va., is preparing to produce a cellophane-like product from wood pulp by a viscose process and not by a cellulose acetate process, according to Dr. L. B. Hitchcock, in a correction to his article, "Our Oldest and Newest Chemical Frontier," which appeared in our pages last month.

Alex. C. Fergusson Co., Philadelphia, completes erection of new two-story building at 20 Oregon ave., that city, and announces the removal of its business and offices to that address. The building occupies an area of 50 by 200 feet and has a private railroad siding.

Dyestuffs division, E. I. du Pont de Nemours & Co., Inc., announces following new colors: Sulfogene Navy Blue 4R, Sulfogene Brilliant Blue 3GCF, Sulfogene Carbon MCF, Leucosol Blue 2G double paste, Lithosol Bordeaux BLMT, and Luxol Fast Red BB.

Roessler & Hasslacher Chemical Co. adds R. F. Brenner, formerly chemist, Owens-Illinois group, to its organization as a member of the company's service staff for the glass trade. His headquarters will be at Cleveland.

Parsons & Petit, New York, in its capacity as selling agent for the Freeport Texas Sulphur Co., issues a new edition of its chart of sulfur data. This chart gives complete statistics on sulfur, pyrites and sulfuric acid. Copies may be obtained upon request.

Allied Chemical & Dye Corp. elects Harold Otis and Charles F. Weber new members of the board of directors. Retiring directors were reelected. New directors fill existing vacancies.

American Cyanamid Co. takes over entire selling of nitrocellulose manufactured by the American Powder Co., Maynard, Mass., a subsidiary which was acquired October 1929.

Hercules Powder Co. publishes a 16-page booklet entitled, "The Story of Modern Lacquer," copies of which may be obtained upon application to the company.

U. S. Industrial Alcohol Co. leases for executive offices a large part of nineteenth floor in the new Lincoln building, 60 East 42nd st., New York.

Doe & Ingalls, Boston, announces that Charles E. Bagley has become associated with its sales department and will specialize in colors and dye chemicals.

William S. Gray & Co., New York, receives tax refunds of $161,078 from Bureau of Internal Revenue, for overassessment of taxes in 1916, 1917, and 1918.

Nichols Copper Co., New York, announces removal of offices to new Bank of the Manhattan Co. building at 40 Wall st., that city.

J. T. Baker Chemical Co., Phillipsburg, N. J., opens Philadelphia office at 1713 Sansom st., that city, in charge of Webster Rice.

Dow Chemical Co. leases space in the Lincoln building, 60 East 42 st., New York, to which it will transfer its offices in that city.

Harshaw Chemical Co., Cleveland, announces removal of New York offices to the Chrysler building, 405 Lexington ave., that city.

Hooker Electrochemical Co. announces removal of executive offices to new Lincoln building, 60 East 42 st., New York.

Conference Committee Adjusts Chemical Rate Differences

Chemical rate differences in the Hawley-Smoot tariff bill and adopted by the House, May 1, are adjusted as follows by the House and Senate conferees:

Calcium acetate, containing by weight not more than 65 per cent of acetic acid, 1⅜ cents a pound; House rate, ¾ cent; Senate, 2 cents.

Calcium acetate, crude, 1 cent a pound; House, free; Senate, 1¼ cents.

Calcium acetate, containing by weight more than 65 per cent, 2 cents; House, 2 cents; Senate, 3 cents.

Acetic anhydride, 3½ cents; House 5; Senate, 2½.

Boric acid, 1 cent; House 1½; Senate 1.

Boric acid, refined, ⅛ cent; House ⅛; Senate free.

Citric acid, 17 cents; House 18; Senate 17.

Formic acid, 3 cents; House 4; Senate free.

Tannic acid, less than 50 per cent 5 cents; House 6; Senate 4.

Tannic acid, more than 50 per cent, 11 cents; House 12; Senate 10.

Tannic acid, more than 50 per cent and medicinal, 18 cents; House 22; Senate 18.

Arsenious acid, white arsenic, free; House free; Senate 2.

Gallic acid, 6 cents; House 10; Senate 6.

Nitric acid, free; House ¼ cent; Senate free.

Oleic acid, 20 per cent; House free; Senate 1½ cents.

Phosphoric acid, containing less than 80 per cent, 2 cents; House 2; Senate 2.

Phosphoric acid, more than 80 per cent, 2 cents; House 3½; Senate 2.

Pyrogallic acid, 12 cents; House 15; Senate 10.

Carbon dioxide, 1 cent, the Senate rate.

Acetone, 20 per cent; House 25; Senate 20.

Aluminum sulfate, containing not more than 15 per cent alumina and more than 1/10 of 1 per cent ferric oxide, 1/5 cent; House 1/10; Senate 1/5.

Ammonium sulfate, free; House ¼ cent; Senate free. Antimony oxide, 2 cents; House 2; Senate 6. Amber and amberoid, 50 cents; House $1; Senate 50 cents. Synthetic gums, 4 cents plus 30 per cent; House 4 cents plus 30 per cent; Senate free.

Bleached shellac free; House 20 per cent; Senate free. Caffeine, $1.25; House $1.50; Senate $1. Caffeine citrate, 75 cents; House 90; Senate 60.

Carbon tetrachloride, 1 cent; House 2½; Senate 1. Chloroform, 4 cents; House 6; Senate 4. Tetrachloroethane and trichloroethylene, 30 per cent; House 35; Senate 25.

Roessler & Hasslacher Chemical Co. announces that liquidation of R. & H. Platinum Works has been effected, its capital repaid, and surplus available added to income account. It was also announced that during 1929, the company acquired a minority interest in Midland Ammonia Co. and that further payments were received from mixed claims commission for goods held by company in Germany prior to entrance of the United States in the war.

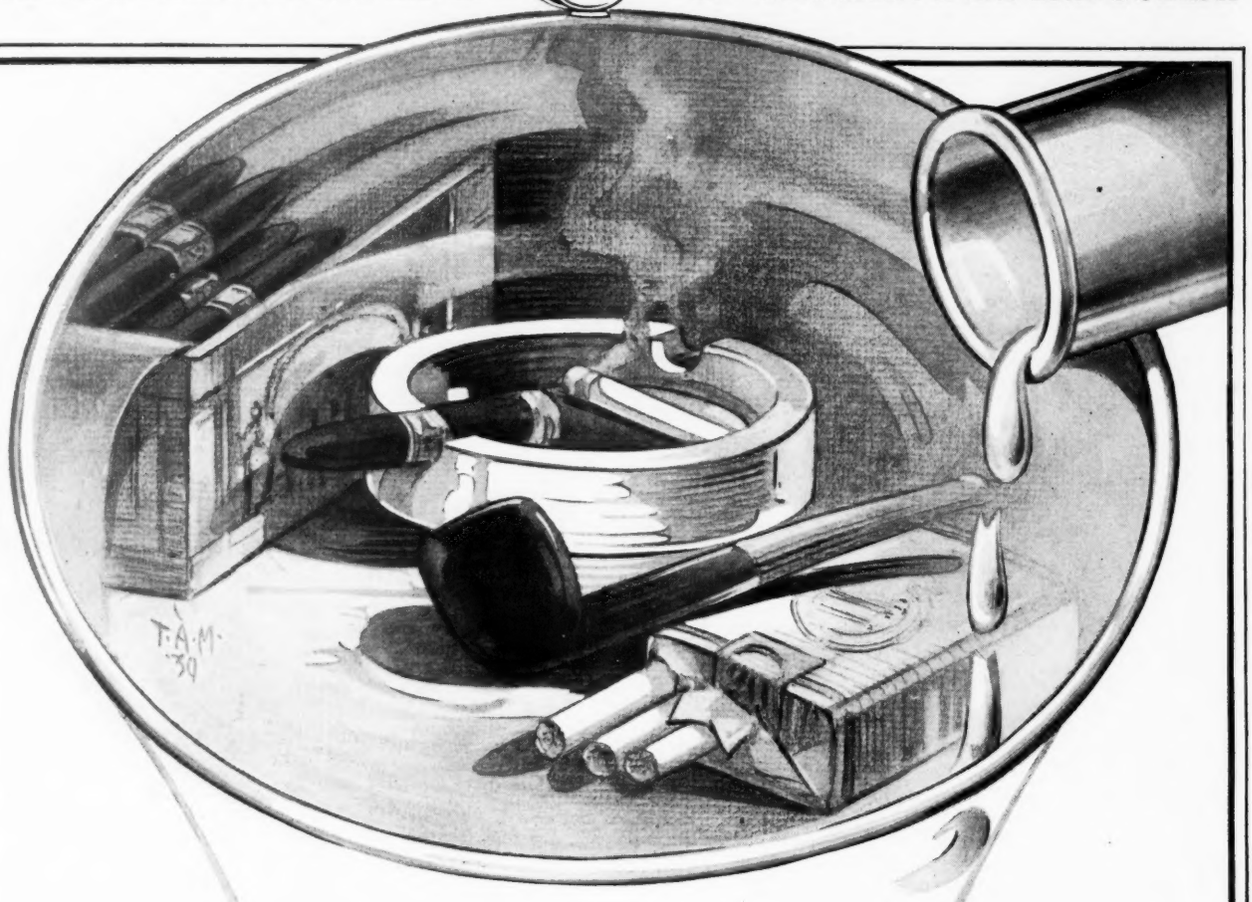
Mathieson Alkali Works, Inc., issues booklet entitled, "Chlorine in Its Newest Form." Booklet describes properties and uses of "HTH," a high test bleaching powder, containing 65 per cent of available chlorine. Copies may be obtained upon request.

Air Reduction Co. leases three floors, a total of 70,000 square feet of floor space in the new Lincoln building, 60 East 42 st., New York.

Eastman Kodak Co. is awarded income and profits tax refund of $2,542,304 by Internal Revenue Bureau on taxes paid in 1921, 1922, and 1923.

Amazon Industrial Chemical Corp., New York, announces removal of offices to 60 East 42 st., that city.

ALCOHOL—ALADDIN'S LAMP OF MODERN DAY INDUSTRY



"Sublime Tobacco!... East to West..."

So sang Lord Byron in the days when tobacco was used as Nature prepared it. How much greater his inspiration had he been privileged to choose from the modern day products of the Tobacco Industry! For chemical science has lent a helping hand to this universally enjoyed product of Mother Nature—and on the basic flavor of Tobacco the laboratory has provided formulae for curing and blending to suit the varying and exacting tastes of all peoples.

• • •

In the Tobacco Industry, as in a thousand and one other phases of modern day Life, Industrial Alcohol plays a major role. Quite naturally the largest producer of Industrial Alcohol is privileged to "rub the modern day lamp" for this important Industry.

U. S. Industrial Alcohol Co. **U. S. Industrial Chemical Co., Inc.**

110 East 42nd Street, New York City

Through the alphabet with Alcohol—Series B

Holding Company Planned for Chilean Nitrate Industry

Guggenheim nitrate producing interests, supported by the Chilean Government, are understood to be the sponsors for a plan to reorganize the nitrate industry in that country, according to reports from Paris where details of the plan are being discussed. It is proposed to set up a holding company with a capital of £75,000,000, from which allotments will be made to participating nitrate producers, based upon the earning capacity of the properties.

The largest allotment supposedly would go to the Guggenheim controlled Anglo-Chilean Consolidated Nitrate Corp. and the Lautaro Nitrate Corp. The Chilean Government will subscribe for approximately 50 per cent of the capital in the new holding concern in return for property concessions to the company having a potential producing capacity of 20,000,000 metric quintals nitrate annually, and remission of present export tax. Under the proposed plan as reported, the Anglo-Chilean-Lautaro companies are to make an outlay of £15,000,000 for new machinery incorporating the Guggenheim process for nitrate recovery. The present production of these two companies is equivalent to over 38 per cent of the Chilean annual output of the natural fertilizer, or more than double that of the next largest producer.

Freeport Texas Co. elects new officers as follows: chairman of the board, O. R. Seagraves; president, Eugene L. Norton; and vice-president and treasurer, Langbourne M. Williams, Jr. Other members of the board of directors are as follows: George Gordon Battle, Elmer G. Deiffenbach, Ralph C. Holmes, Charles B. Holladay, Victor G. Paradise, Edward H. Thaete, and Frank A. Willis.

Chemical & Dye Corp., Springfield, N. J., formerly known as Chemical Corp. of America, goes into temporary receivership, listing assets at $300,000 and liabilities at $80,000. Receivership was requested because of internal dissension.

Monsanto Chemical Works announces that it is now producing maleic acid.

Mathieson Alkali Works purchases abrasive plant of the Norton Co. in Niagara Falls.

Atlas Powder Co. is granted income tax refund of $15,190 by the United States court of claims.

F. W. Berk & Co., chemicals, New York, announces removal to 11 Cliff st., that city.

House Committee Proposes Private Operation of Muscle Shoals

Rejecting the provisions of the Norris resolution for the operation of the Muscle Shoals properties by the Federal Government, which was passed by the Senate, April 4, the subcommittee of the House Military Affairs Committee on May 1 brought to the committee its proposals to authorize the President to lease the properties for private operation.

The House members hurdled a legislative barrier by striking out all the provisions after the enacting clause of the Norris resolution and appending the substitute provisions. By so doing they obviated the necessity of having the measure go back to the Senate committee, since it still would be a Senate resolution, subject thereafter only to conference action.

The new draft of legislation would authorize the President to appoint a board of "three eminent persons, one of whom shall be identified with agriculture, who shall have the power to negotiate and execute a lease for the properties comprising the Muscle Shoals development, with the approval of the President, which approval shall be given in not less than 30, nor more than 60 days after the contracts are signed."

There may be one or a multiple of contracts made for the lease of the properties, all of which must be based on certain principles set out in the proposed legislation.

Anglo-Chilean Consolidated Nitrate Corp. contracts with U. S. Steel Products Co. for approximately 12,000 tons of fabricated steel which will enter into the construction of the Lautaro Nitrate Co.'s new plant in Chile. Company also places with the M. A. N. (Germany) a contract for five Diesel engine units, with A. E. G. generators, to be installed at the new plant. This later order involves more than $1,000,000.

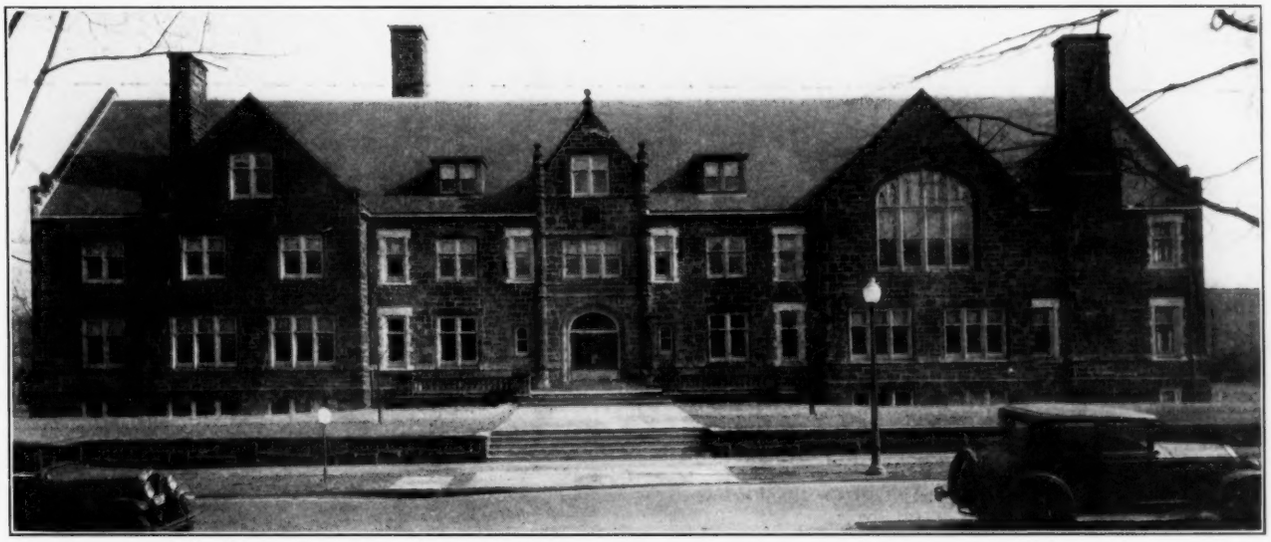
Bradley & Baker, fertilizers and chemicals, New York, announces removal of offices to 370 Lexington ave., that city.

Continental Chemical Co., New York, changes corporate name to Gardner Chemical Corp.

International Salt Co., through its subsidiary, Retsof Mining Co., acquires assets and properties of Sterling Salt Co.

Ciba Co. announces removal of New York offices to 627 Greenwich st., that city.

Cook Swan Oil Corp., New York, announces removal of main office to 410 Broadway, that city.



The new home of the Harshaw Chemical Co. at 1954 East 97 street, Cleveland

Two Birds-- *with One Stone!*

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"The Business Magazine of Chemistry"

Occupies an enviable position as a vital essential link between the technical and economic phases of production, processing and consumption of chemicals and chemical products.

To keep thoroughly posted on Chemical Progress, it should be on your desk every month.

Drug and Chemical Guide-Book

1930 (*Eighth*) Edition

The new annual edition with its many changes is just off the press, containing 940 pages of information on where to buy chemicals, drugs, dyestuffs, containers, etc. In addition it gives the chemical and physical data on each, together with grades, types, uses and kind and size of containers used. You will find this handy *desk-size volume* invaluable.

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Federal Phosphorus Distributes Data on Diphenyl Properties

Federal Phosphorus Co. division, Swann Corp., announces that information on the properties of diphenyl is now ready for distribution and that copies of the data may be secured from the Birmingham or New York offices of the company. As an indirect heating medium, handled in much the same way as steam, diphenyl is said to have promise because of its high boiling point and low vapor pressure at elevated temperatures. It has a melting point at atmospheric pressure of 157° F; boiling point at 492° F.; and a critical temperature of 980° F. Its advantages in connection with various evaporation, distillation, digestion, drying and other operations involved in the chemical, oil, soap, paint, varnish and enamelling industries where high temperatures are required, are now being actively investigated.

Bakelite Upheld in Import Suit

Bakelite Corp. is upheld in decision of U. S. Court of Customs Appeals denying entry of materials and articles made of synthetic phenolic resin. Decision affirmed a previous one of the U. S. Tariff Commission and brought to close case begun in 1925 by Bakelite Corp. which sought relief from infringement of patent rights by importers of the foreign material. The court in affirming the decision of the Tariff Commission stated that it found that the appellants were engaged in importing material which constituted an infringement of the patent rights of the Bakelite Corporation, and that goods imported by the appellants were being sold to the purchasers as the goods of the Bakelite Corporation.

George H. Jackle, fertilizers and chemical specialties, New York, announces removal of offices to the new Chrysler building, that city.

Agfa-Ansco Corp., Binghamton, elects C. F. Samms, president, General Electric X-ray Film Corp., to its board of directors.

THE OVERRATED MARKSMAN

ABOUT
ALL THE
MONEY
IN THE WORLD
WELL SONNY, IF YOU CAN'T KEEP FROM GOIN' HUNGRY AROUND HERE YOU AIN'T SO MUCH OF A SHOT AS YOU'RE CRACKED UP TO BE.
U.S.A.
U.S. BUSINESS
OPPORTUNITY

— Ding in the N. Y. Herald-Tribune

International Nitrogen Conference Fails To Form World Cartel

International nitrogen cartel's plan for a new and larger world combine in nitrogen is reported to have failed, temporarily at least, as a result of the unsatisfactory outcome of a conference held in Paris during the last week of April. Another meeting, however, is planned for Berlin in the near future.

Negotiations were under way to include the United States, France, Belgium and Holland, in the international cartel which was organized last year by German, British, Chilean and Norwegian producers. Uncertainty regarding future development of the United States' production of synthetic nitrogen, and certain conditions stipulated by her representatives due to inability to subscribe to any price-fixing and production quotas as applied to this country because of legal restrictions, are reported to have been the chief reasons for the failure of the conference. It is also reported that French, Belgium and Dutch producers demanded production quotas in excess of those thought fitting by the conference.

Because of the anti-trust laws in this country, it is thought that the chief interest of American manufacturers of nitrogen fertilizer problems is chiefly in plans of the international cartel involving markets outside of the United States.

Textile Foundation Proposed

Textile Foundation, a Federal corporation, is to be created to dispose of nearly $2,000,000 profit from the sale of German reparation dyes in the United States, if a House bill providing such disposition is passed by the Senate. The Textile Alliance, Inc., which handled the reparations dyes has attempted for years to dispose of this fund, and the bill passed by the House provides that it be turned over to a Federal corporation, known as the Textile Foundation, to be used for research on behalf of the textile industry.

Williamson bill, to transfer to the Department of Justice the Bureau of Prohibition without any of the amendments to safeguard permittees, is recommended to the full committee by a subcommittee of the Senate judiciary committee, which disregarded entirely recommendations of the alcohol-consuming industries to leave control of the permissive features of prohibition enforcement in the jurisdiction of the Treasury Department.

Charles F. McKenna, retired chemical engineer and former president of the Chemists' Club, New York, dies April 25, aged 68. He was engaged as a chemist from 1885 to 1893 and served as director of the laboratory of physical testing of the City of New York. From 1897, until ill health forced his retirement in 1922, he was widely known as a consultant. In 1910 he was president, Institute of Chemical Engineers and in 1918, he was chairman, subcommittee on chemical engineering, council of national defense.

Reynolds Chemical Co.'s plant at Utica, N. Y., is damaged by fire April 23 which caused an undetermined but considerable degree of damage.

Thomas J. Shields, selling and purchasing agent, New York, is elected to membership in the Association of Manufacturers' Representatives.

Dyestuffs division, E. I. du Pont de Nemours & Co., offers new oil-soluble orange dye for coloring gasoline, named "Du Pont Oil Orange."

Connersville Blower Co., Inc., Connersville, Ind., announces removal of New York office to the Graybar Building, and that of the Chicago office to 20 North Wacker drive.

United States Gypsum Co. acquires Northwestern Expanded Metal Co., Chicago, manufacturer of metal lath products.

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Flotation Process of Separating Minerals

WOOD CREOSOTE OIL
for
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WOOD CREOSOTE OIL
for
Killing Fungus Growths and Weeds

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CLEVELAND, OHIO.

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SOLVENTS AND PLASTICIZERS
for the Lacquer Industry

Ethyl Acetate
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Amyl Propionate
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Dimethyl Phthalate
Diethyl Phthalate

Dibutyl Phthalate
Diamyl Phthalate
Dibutyl Tartrate
Triacetine

Special Solvents and Plasticizers

KESSLER CHEMICAL CORPORATION
ORANGE, N. J.

The Financial Markets

E. I. du Pont de Nemours & Co., Inc., Reports Net of $17,347,626

Quarter Net Equivalent to $1.52 Per Share As Compared With $2.42 in Corresponding Period of 1929—Monsanto Reports First Quarter Net of $293,170.

E. I. du Pont de Nemours & Co. reports for quarter ended March 31, 1930, consolidated net income of $17,347,626 after interest, federal taxes, etc., equivalent after debenture dividends, to $1.52 a share (par $20) on 10,463,693 average number of common shares outstanding during the quarter. This compares with $25,239,845 or $2.42 a share on 9,838,675 average common shares in first quarter of 1929. Income from operations in the 1930 first quarter was $6,748,281, compared with $7,442,844. Income from investments was $11,489,847, of which $10,481,065 came from the holdings in General Motors. The income from investments in the corresponding period of 1929 was $18,562,250, of which $17,466,131 was from the company's General Motors holdings.

Earnings for the first quarter of last year included $9,981,220 in extra dividends from the General Motors investment, compared with $2,993,600 from the same source during the first quarter of this year.

Surplus account on March 31 stood at $177,242,512, compared with $144,920,215 at the beginning of 1930 and with $134,691,374 at the end of the first quarter of last year. Of this increase $7,467,060 represented the amount received in excess of par for common stock issued and sold under the executives' trust and bonus plans, and $22,457,745 from revaluation of the company's investment in General Motors.

Consolidated income account for quarter ended March 31, 1930, compares as follows:

	1930	*1929*	*1928*	*1927*
Oper inc	$6,748,281	$7,442,844	$3,977,713	$3,287,771
Inc G M invst	10,481,065	17,466,131	14,974,930	11,977,865
Other inc	1,008,782	1,096,119	*3,208,707	525,526
Total inc	$18,238,128	$26,005,094	$22,161,350	$15,791,162
Fedl tax	872,290	744,560	625,729	310,830
Interest	18,212	20,689	21,423	22,064
Net inc	$17,347,626	$25,239,845	$21,514,198	$15,458,268
Deb divs	1,492,979	1,392,168	1,209,711	1,198,988
Com divs	13,457,155	19,819,672	16,634,718	13,307,545
Surplus	$2,397,492	$4,028,005	$3,669,769	$951,735
†Prev. surp	144,920,215	105,710,319	97,785,244	66,417,566
§Addit surp	7,467,060	.....	.....	.....
‡Reval G M stock	22,457,745	24,953,050	19,962,440	26,184,371
P & L sur	$177,242,512	$134,691,374	$121,417,453	$93,553,672

*Includes approximately $2,286,000 profit from sale of U. S. Steel common stock. †Surplus on December 31. ‡Revaluation of company's holdings of General Motors Corp. common stock. §Surplus from issue of common stock sold under executives trust and bonus plans.

American I. G. Reports Net of $2,088,442 Since Organization

American I. G. Chemical Corp. for period April 26, 1929, date of the company's organization, to March 31, 1930, reports net income of $2,088,442 after federal taxes, interest, etc., equivalent under the participating provisions of the shares to $2.65 a share on 486,139 no-par shares of Class A common stock and 26 cents a share on 3,000,000 no-par shares of Class B common stock.

Total income for the period amounts to $3,786,562.55, from which are deducted general and administrative expenses and taxes amounting to $229,790 and interest on debentures amounting to $1,468,329. Income before providing for debenture interest, but after deducting all other charges, including taxes, is $3,556,771, or about two and a half times the amount necessary for the payment of debenture interest.

Total assets are $65,805,622, of which $43,574,886 represent investments. In the letter to stockholders, it is stated that the holdings of the company in the chemical and allied industries had been substantially increased during the year. As a matter of fact, the investments are more than double the figure of $20,767,000 reported on May 31, 1929. All securities are carried in the books at cost, although the market value is considerably in excess thereof.

Total current assets amount to $17,153,987, of which $2,610,884 is in cash; $3,921,385 in marketable securities and $9,263,006 in short-term loans. Current liabilities amount to $795,686. Current assets are thus more than 21 times current liabilities. The company's funded debt amount to $29,933,000 of guaranteed 5½% convertible debentures.

Of the 3,000,000 authorized shares of no-par common A stock, 486,139 shares have been issued and are outstanding and are listed in the liabilities for $12,153,475. Of the common B $1 par value stock, all of the 3,000,000 authorized shares have been issued and are outstanding.

The capital surplus of the company amounts to $19,923,460. This includes net income for the period ended March 31, proceeds from the sale of the common A and common B stock and from the conversion of $67,000 worth of the 5½% debentures into 1,139 shares of common A stock, and after deducting organization expenses and bond discount amounting to $2,845,506, which was charged against the capital surplus.

As $2,913,525 were added to capital surplus through sale of 85,000 common A shares and conversion of $67,000 debentures, the capital surplus on March 31, 1930, is notwithstanding these charges, slightly higher than the capital surplus on May 31, 1929, when these expenses were shown as deferred charges of $2,768,321 —under assets.

The total capital and surplus on March 31, 1930, was $35,076,935, compared with $30,870,218 on May 31, 1929.

Monsanto Chemical Works reports net profit for quarter ended March 31, 1930, of $293,170 after charges and federal taxes, equivalent to 71 cents a share on 410,317 no-par shares of common stock. Due to fact that company has acquired a number of new properties since corresponding quarter of last year no comparative figures are available.

I. G. Farbenindustrie A. G. appoints City Bank Farms Trust Co., New York, as transfer agent for its American depository receipts for bearer shares. These receipts have been admitted by the New York Curb Exchange to unlisted trading privileges.

J. T. Baker Chemical Co. reports for year ended December 31, 1929, net profit of $235,790 after charges and federal taxes, equivalent, after dividends on the first and second preferred stocks, to $1.81 a share on average number of no-par common shares outstanding during the year, and $1.76 a share on 102,809 common shares outstanding at end of 1929.

Consolidated Chemical Industries, Inc., reports for the first 1930 quarter a net income of $127,150, or 45 cents a share on the class B stock after allowing for class A participation. This compares with a net of $141,081, or 59 cents a share of class B stock in the first quarter of 1929.

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Mathieson Profit for Quarter Equivalent to 76 Cents Per Share

Mathieson Alkali Works, Inc., reports for quarter ended March 31, 1930, net income of $541,946 after depreciation, depletion, federal taxes, etc., equivalent after 7% preferred dividend requirements to 76 cents a share on 650,436 no-par shares of common stock. This compares with $506,675 or 71 cents a share on common in first quarter of 1929, computed on present share basis:

Income account for quarter ended March 31, 1930, compares as follows:

	1930	*1929*	*1928*	*1927*
Total earn	$866,412	$831,314	$736,571	$723,455
Depr & depl	281,639	257,260	226,068	202,988
Oper profit	$584,773	$574,054	$510,503	$520,467
Inc credits	20,923	6,689	*14,267	*13,293
Total income	$605,696	$580,743	$496,236	$507,174
Federal tax	63,750	74,068	66,773	60,906
Net income	$541,946	$506,675	$429,463	$446,268

*Debit.

Union Carbide & Carbon Corp. Reports Net of $6,472,783

Union Carbide and Carbon Corp. and subsidiaries report for the three months ended on March 31 net earnings of $6,472,783 after taxes, interest, dividends on the preferred stock of subsidiary companies, depreciation and other charges, equivalent to 72 cents a share on the 8,995,208 shares outstanding. In the first quarter of 1929 earnings were $7,203,945, or 87 cents a share on the present shares, or $2.62 on the old shares, which were split on a three-for-one basis.

Consolidated income account for quarter ended March 31, 1930, compares as follows:

	1930	*1929*	*1928*	*1927*
Net aft tax	$8,755,165	$9,646,500	$8,329,468	$7,571,152
Int & sub pf divs	308,440	309,752	295,675	299,763
Depr etc	1,973,942	2,132,802	2,029,661	1,925,060
Net income	$6,472,783	$7,203,946	$6,004,132	$5,346,329

Commercial Solvents Nets $750,492

Commercial Solvents Corp. reports for the quarter ended March 31, 1930, net profit of $750,492, after depreciation, interest, federal taxes and provision for contingencies and inventory adjustments, equivalent to 30 cents a share on 2,481,232 shares of no-par common stock. This compares with net profit in first quarter of 1929 of $844,355, equal to 34 cents a share based on above number of shares. Income account for quarter ended March 31, 1930, compares as follows:

	1930	*1929*	*1928*	*1927*
Oper profit	$915,029	$1,129,641	$731,688	$670,637
Other inc	67,970	47,772	15,102	18,410
Total inc	$982,999	$1,177,413	$746,790	$689,047
Charges	26,428	119,065	58,617	41,810
Fed tax, etc	*206,079	213,993	112,447	121,138
Net profit	$750,492	$844,355	$575,726	$526,099

*Includes provision for contingencies and inventory adjustments.

Eastman Kodak Co. and subsidiaries for year ended December 28, 1929, report net profit of $22,004,915 after depreciation and federal taxes, the same as shown in preliminary statement, equivalent after 6% preferred dividends, to $10.26 a share on ayerage number of common shares outstanding during the year, and $9.56 a share on 2,261,320 shares of common outstanding at end of year. This compares with $20,110,440 or $9.60 a share on 2,056,219 common shares in 1928. The 1929 figures do not include adjustment of income and profits taxes for prior years amounting to $3,260,000 which was credited to surplus.

Pennsylvania Salt Manufacturing Co. estimates earnings of approximately $1,300,000 for fiscal year ended June 30 next.

Market Value of Chemical Stocks Declines $193,752,000 During April

Stocks of nine chemical companies displayed a loss in market value of $193,752,000 at the end of April as compared with values at the end of the previous month, according to the New York Times. This compares, however, with a net gain in evaluation for these same companies of $607,621,000 from January to March.

Individual figures compare as follows:

Company	*April 30, 1930 Shares Listed*	*Closing Mar.*	*Closing Apr.*	*Net Change*	*Increase*	*Decrease*
Allied Chemical & Dye	2,286,370	303½	325	+21½	$49,156,955	
Commercial Solvents Corp	2,481,771	37	32¼	— 4¾	.....	$11,788,412
Davison Chemical Co.	504,289	43	36⅜	— 6⅝	.....	3,340,915
Du Pont de Nemours & Co.	10,468,305	140	133¼	— 6¾	.....	70,661,059
Mathieson Alkali Works	639,049	50	46¼	— 3¾	.....	2,396,434
Texas Gulf Sulfur	2,540,400	64½	60⅜	— 3⅝	.....	9,208,950
Union Carbide & Carbon	9,221,402	105	89⅞	—15⅛	.....	139,473,705
U. S. Industrial Alcohol	373,844	103	89¼	—13¾	.....	5,140,355
Virginia-Carolina Chemical	479,530	8⅜	6¼	— 1⅞	.....	899,119
Total					$49,156,955	$242,908,949

Air Reduction Nets $1.98 Per Share Against $1.67 in 1929 Quarter

Air Reduction, Inc., reports for quarter ended March 31, 1930, net profit of $1,523,276 after depreciation, federal taxes, etc., equivalent to $1.98 a share on 770,402 no-par shares of stock. This compares with $1,237,562, or $1.67 a share on 738,363 shares in first quarter of 1929. Net profit shows an increase of 23 per cent over the first quarter in 1929 although reserves for depreciation, etc., have been increased 19 per cent for the period over reserves a year ago.

Consolidated income account for quarter ended March 31, 1929, compares as follows:

	1930	*1929*	*1928*	*1927*
Gross income	$5,451,718	$4,732,385	$3,503,522	$3,365,861
Oper exp	3,244,677	2,894,520	2,285,634	2,226,913
Oper inc	$2,207,041	$1,837,865	$1,217,888	$1,138,948
Depr. etc	513,328	431,671	488,948	455,587
Profit	$1,693,713	$1,406,194	*$728,940	*$683,361
Fed taxes	170,437	168,632	.....	.....
Net profit	$1,523,276	$1,237,562	.....	.....

*Before federal taxes.

Texas Gulf Quarter Net at $3,803,701

Texas Gulf Sulphur Co., Inc., reports for quarter ended March 31, 1930, net income of $3,803,701 after depreciation and federal taxes, but before depletion, equivalent to $1.50 a share on 2,540,000 no-par shares of stock. This compares with $3,880,260 or $1.52 a share in first quarter of 1929.

During first quarter of 1930, company increased its reserves, including reserves for depreciation and federal taxes, by $276,376, making total of these reserves $12,575,505 on March 31, last.

Statement for quarter ended March 31, 1930, compares as follows:

	1930	*1929*	*1928*	*1927*
*Net inc	$3,803,701	$3,880,260	$3,087,839	$2,854,631
Dividends	2,540,000	2,540,000	2,540,000	2,540,000
Surplus	$1,263,701	$1,340,260	$547,839	$314,631
†P & L surp	22,652,261	16,641,343	11,491,302	8,500,372

*After depreciation and federal taxes. †Includes reserve for depletion.

Industrial Rayon Corp. reports for quarter ended March 31, 1930, net profit of $359,439 after depreciation, interest and federal taxes, equivalent to $1.79 a share on 199,923 no-par shares of stock. This compares with $379,828 or $1.99 a share on 190,431 shares outstanding in first quarter of 1929.

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Financial Diary

April 1—Archer Daniels declares regular quarterly dividends of 50 cents on the common and $1.75 on the preferred, payable May 1 to holders of record April 20. Meetings of American Commercial Alcohol, Eastman Kodak, Columbian Carbon, Consolidated Chemical Industries, Hercules Powder and Merck Corp.

April 2—Columbian Carbon declares regular dividend of $1.25 and extra dividend of 25 cents, payable May 1 to holders of record April 15.

April 7—Meetings of Freeport Texas and United Chemicals.

April 8—McKesson & Robbins meeting.

April 9—Meetings of Industrial Rayon, Newport Co., American Zinc, Lead & Smelting, Certain-teed, Air Reduction and Celanese.

April 10—Old Freeport Texas board ousted, stock soars 5¾ points. Allied Chemical and Dye common rises 15 points. Borax Consolidated, Ltd., passes dividend on non-cumulative preferred. St. Joseph Lead meeting.

April 14—Abbott Laboratories declares quarterly dividend of 62½ cents, placing stock on $2.50 annual dividend basis instead of previous $2.00. Payable July 1 to stock of record June 16.

April 15—Meetings of Union Carbide, J. T. Baker and Canadian Industrial Alcohol.

April 17—Meetings of Texas Gulf Sulphur, National Lead and MacAndrews & Forbes. U. S. Industrial Alcohol meeting to elect directors and extinguish preferred stock.

April 21—McKesson & Robbins declares dividends of 50 cents on the common, payable May 10 to holders of record May 1, and 87½ cents on the preferred, payable June 16 to holders of record June 2.

April 22—Dow declares dividends of 50 cents on the common and $1.75 on the preferred, payable May 15 to holders of record May 1.

April 23—DuPont lists 241,130 additional common stock with a market value of $33,000,000, to be used to buy Roessler & Hasslacher.

April 24—Merck Corp. dividends of $2.00 declared on the preferred, payable July 1 to holders of record June 17. Meetings of U. S. Industrial Alcohol, Westvaco Chlorine, and Tennessee Copper & Chemical.

April 25—Westvaco Chlorine declares dividend of 50 cents on the common, payable June 1 to holders of record May 15.

April 28—Allied Chemical & Dye meeting.

April 30—Meetings of Atlas Powder, Hercules Powder, Mathieson Alkali and Asbestos Corp.

National Oil Products Reports Net of $134,748 for 1929

National Oil Products Co., and its wholly owned subsidiary the Metasap Chemical Co., report for year ended December 31, 1929, shows consolidated net income of $134,748 after expenses, depreciation and federal taxes, equivalent, after 7% preferred dividends, to $3.32 a share on 30,000 no-par shares of common stock.

Balance sheet as of December 31, 1929, shows total assets of $1,477,746. Current assets totaled $699,069, and current liabilities $173,266.

Consolidated income account for year, 1929, follows: Sales $2,821,781; costs, depreciation and expenses $2,673,749; operating profit $148,032; other income $19,548; total income $167,580; discount on sales, etc., $32,832; net profit $134,748.

Tennessee Copper & Chemical Reports Net of $1,877,431 for 1929

Tennessee Copper & Chemical Corp. and subsidiaries report, for year ended December 31, 1929, shows net profit of $1,877,431, after depreciation, federal taxes, interest, etc., equivalent to $2.19 a share earned on 857,243 shares of no-par stock outstanding at end of the year. In 1928, company reported profit of $1,267,226, after depreciation, interest, etc., but before federal taxes. Adolph Lewisohn, president, says: "During 1929 production of copper, sulphuric acid, iron sinter and fertilizer by the company and its subsidiaries was largest in their history."

Consolidated income account for year 1929, compares as follows:

	1929	*1928*	*1927*	*1926*
Sales	$12,395,407	$10,223,579	$8,329,285	$9,508,661
Misc inc	454,365	277,902	190,837	152,481
Total inc	$12,849,772	$10,501,481	$8,520,122	$9,661,142
Costs, exp., tax., etc.	10,150,579	8,717,857	7,589,013	8,068,695
Interest	192,670	88,801	94,338	54,283
Res for min int	37,959	.....	.....	.....
Depr res	458,252	427,597	428,273	446,547
Reserve for fed tax	132,881	.....	.....	.....
Net profit	$1,877,431	†$1,267,226	†$408,498	†$1,089,617
Dividends	847,605	596,566	503,358	794,618
Surplus	$1,029,826	$670,660	*$94,860	$294,999

*Deficit. †Profit before federal taxes.

Atlas Powder Nets $350,697

Atlas Powder Co. reports for quarter ended March 31, 1930, net income of $350,697 after depreciation, federal taxes, etc., equivalent, after 6 per cent preferred dividend requirements to 83 cents a share on 261,438 no-par shares of common stock. This compares with $523,089, or $1.48 a share in first quarter of 1929. Consolidated income account for quarter ended March 31, 1930, compares as follows:

	1930	*1929*	*1928*
Net sales	$4,253,635	$5,609,638	$4,612,873
Costs ad expenses	3,918,017	5,099,485	4,270,581
Operating profit	$335,618	$510,153	$342,292
Other income	57,718	82,319	87,673
Total income	$393,336	$592,472	$429,965
Federal taxes	42,639	69,383	67,974
Net income	$350,697	$523,089	$361,991
Preferred dividends	135,000	135,000	135,000
Common dividends	261,435	261,435	261,435
Deficit	$45,738	*$126,654	$34,444

*Surplus.

Hercules Quarter Net at $731,535

Hercules Powder Co. reports for quarter ended March 31, 1930, net profit of $731,535 after depreciation, federal taxes, etc., equivalent, after dividend requirements on 7% per cent preferred stock, to 88 cents a share on 598,000 no-par shares of common stock. This compares with $939,046, or $1.23 a share, in first quarter of 1929. Income account for quarter ended March 31 1930, compares as follows:

	1930	*1929*	*1928*	*1927*
Gross	$6,865,889	$8,438,926	$7,107,972	$6,577,670
*Net profit	731,535	939,046	797,038	700,811
Pfd divs	199,921	199,922	199,922	197,937
Com divs	448,500	448,500	448,500	.....
Surplus	$83,114	$290,624	$148,616	.....

*After depreciation, federal taxes, etc.

Northern Industrial Chemical Co., South Boston, Mass., for the year ended Dec. 31, 1929, reports: Assets: Real estate, $18,151; machinery, $159,510; furniture, fixtures, etc., $6,196; merchandise, $61,548; notes receivable, mortgage, $2,000; accounts receivable, $67,891; cash, $58,618; securities, $29,837; cash surrender value life insurance, $11,499; secret process, $26,700; drum. inv., $2,095; total, $444,045. Liabilities: Common stock, $351,023; accrued payrolls, $3,304; accounts payable, $16,826; reserves, $72,892; total, $444,045.

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Imperial Chemical Industries Reports Higher Net for 1929

Imperial Chemical Industries, Ltd., reports for year ended December 31, 1929, net profit of £5,780,208 after provision for obsolescence and federal taxes, comparing with £5,212,703 in 1928. General reserves of the company at December 31, 1929, were £16,725,000 against £11,009,138 at end of previous year, and book value of marketable securities as of December 31, last, after deducting profits realized from the sale of investments, showed an excess over market value of £983,347.

Statement for year 1929 follows: Net profit after obsolescence and federal taxes £5,780,208; brought forward from 1928, £108,807; total £5,889,015; general reserves £529,020; carried forward £350,923; balance £5,009,072; preference dividends £1,407,755; available for ordinary shareholders £4,601,317.

Westvaco Chlorine Nets $239,762 in First Quarter

Westvaco Chlorine Products Corp. and subsidiaries for the quarter ended March 29, 1930, show net profits of $239,762 after depreciation, Federal taxes and other charges, equivalent after dividend requirements on the 7 per cent preferred stock to 89½ cents per share on 225,155 no-par shares of common stock. This compares with earnings of $1.16 per share for the first quarter of 1929 based on the present number of shares outstanding.

Total current assets on March 29, 1930, were $1,569,166 against current liabilities of $253,684, comparable with current assets at the end of the first quarter in 1929 of $1,671,341 and current liabilities of $282,487.

Wood Chemical Products Co., engaged in developing pine tar products under trade names reports for 1929 a net income of $116,183, or $1.71 a share on the class B shares after allowing for participation on the class A stock. This compares with $138,892, or $2.04 a share, on the class B shares in 1928.

The company's balance sheet at the end of 1929 shows current assets of $299,033; current liabilities, $72,638; net working capital, $226,395; and total assets, $1,396,431.

Flintkote Co. reports year ended December 31, 1929, net profit after taxes of $685,371. Estimated profits of various Colas companies abroad indicate that Flintkote's portion of their earnings after taxes will approximate $200,000. No portion of these earnings has as yet been declared as dividends and, therefore, no effect is given to them in 1929 profits of Flintkote Co.

National Distillers Products Corp. and subsidiaries reports for quarter ended March 31, 1930, shows profit of $204,496 after interest, depreciation and subsidiary preferred dividends, but before federal taxes. In first quarter of 1929, company reported profit of $232,279 after interest and depreciation, but before federal taxes.

Liquid Carbonic Corp. lists on the New York Stock Exchange 31,334 additional shares of common stock, no par, of which 26,667 shares are in exchange for shares of the capital stock of Canadian Carbonate, Ltd., and 4,667 shares are for full payment for the business and assets, subject to liabilities, of Keystone Carbonic Gas Co.

Borax Consolidated, Ltd., passes dividend on the 6 per cent non-cumulative preferred ordinary shares until accounts for the full financial year terminating September 30 next are settled. Annual report of the company issued recently stated that a very large reduction in profit had been sustained due to competition.

Etablissements Kuhlmann net profit for 1929 is understood to be about 48,000,000 francs, compared with 39,500,000 in 1928, and dividend 16%, same as 1928.

Montecatini Maintains Annual Dividend at 18 Per Cent for 1929

Montecatini net profits for 1929 were 98,172,000 lire, or 5,817,000 less than for 1928, after 11,125,000 were set aside for depreciation, but dividend is maintained at 18 per cent. Reserves are up from 345,959,000 lire to 362,542,000, capital being 500,000,000.

Production of pyrites is stated to be 534,269 tons, against 441,187, with world production at 698,550, against 558,390. Operation of lead and zinc mines has been suspended, owing to market conditions. Sulphur output was 72,144 tons against 68,016, and will exceed 100,000 next year. For phosphate fertilizers, output was 908,000 tons, against 758,000, and covered 60 per cent of Italian consumption, against 55 per cent. Company reports its sulphate of ammonia plants in Sweden, Japan, Germany, Poland and Belgium working well, while new plant in which it holds an interest in Holland will be completed this year. Consolidated Mining & Smelting Co. of Canada has bought Fauser-Montecatini patents for factory to be erected at Trail, B. C. Sales in Italy amounted to 122,000 tons, against 107,000.

Rio Tinto Net Up For 1929

Rio Tinto Co., Ltd., reports for year ended December 31, 1929, net profit of £1,286,279 after interest, income taxes, pension fund, etc., equivalent after dividends on 5% preverence stock, to 56.70% earned on £2,125,000 ordinary stock. This compares with £847,082 or 40.84% on £1,875,000 ordinary stock in 1928.

Statement for year 1929 compares as follows:

	1929	*1928*	*1927*	*1926*
*Net profit	£1,286,279	£847,082	£1,016,840	£1,191,045
Bal from prev year	167,371	151,539	153,449	481,154
Total	£1,453,650	£998,621	£1,170,289	£1,672,199
†Pfd divs	81,250	81,250	81,250	81,250
†Ord divs	1,168,750	750,000	937,500	937,500
Res fund	.....	.....	.....	500,000
Bal. carried forward	£203,650	£167,371	£151,539	£153,449

*After interest, income taxes, pension fund and other deductions. †Includes final dividends recommended by directors.

British Celanese announces that turnover during 12 months ended February 28, 1930, was more than 50% in excess of value of previous year. Trading profits also were up 50% and are estimated at £1,100,000 after charging excise duty and all expenses but before debenture services, depreciation and other appropriations. Annual report will not be available until September.

Johns-Manville Corp. and subsidiaries report for quarter ended March 31, 1930, net profit of $741,630 after expenses, federal taxes, etc., equivalent after 7% preferred dividend requirements, to 81 cents a share on 750,000 no-par shares of common stock. This compares with $1,106,089 or $1.30 a share in first quarter of 1929.

Celluloid Corp. (controlled by Celanese Corp. of America) reports for year ended December 31, 1929, net profit of $719,308 after depreciation, federal taxes and other reserves, comparing with $591,957 in 1928. Capital stock consists of 23,882 no-par shares of $7 first preferred participating stock, 24,551 no-par shares of $7 dividend preferred stock and 194,951 no-par common shares.

Archer-Daniels-Midland Co. reports for six months ended March 1, 1930, net profit of $806,160 after depreciation, federal taxes, etc., equivalent after dividend requirements on 7% preferred stock, to $1.22 a share on 549,546 no-par shares of common stock. This compares with $640,638 or $1.03 a share on 480,852 common shares in corresponding period of previous year.

Sandoz Chemical Works of Basle, large manufacturers of aniline dyestuffs and chemicals declares a dividend of 25 per cent on stock, the same as was paid last year.

The Industry's Stocks

1930 April High	1930 April Low	1930 April Last	1930 High	1930 Low	1929 High	1929 Low	Sales In April	Sales During 1930	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1929	Earnings $-per share-$ 1928
NEW YORK STOCK EXCHANGE														
150⅜	138½	144⅜	150⅜	118	223½	77	116,000	561,500	Air Reduction	No	770,000	$3.00	5.63	4.61
343	296	325	343	255¾	354½	197	52,300	127,600	Allied Chem. & Dye	No	2,286,000	6.00	12.60	11.12
126½	123	123	126½	121	125	118½	1,400	6,400	7% cum. pfd.	100	393,000	7.00	76.84	68.63
10⅜	7	7	10⅜	6⅜	23⅜	4	11,500	38,600	Amer. Agric. Chem.	100	333,000		Nil	1.59
39	30	30	39	26	73¾	18	11,000	36,700	6% cum. pfd.	100	285,000		2.47	7.86
26	19	20½	33	19	55	20	67,200	285,900	Amer. Com. Alc.	No	382,000	1.60	4.78	3.39
51½	41	42	51½	41	81¾	31½	88,400	178,200	Amer. Metal Co., Ltd.	No	868,000	3.00	3.23	3.58
115½	112	112	116	110	135	106	1,100	2,500	conv. 6% cum. pfd.	100	69,000	6.00	47.53	26.52
79⅛	68½	68½	79⅛	68½	130½	162	139,900	483,100	Amer. Smelt. & Refin.	No	1,830,000	4.00	10.02	8.24
141	139⅜	140½	141	138½	16⅛	15⅞	2,200	10,700	7% cum. pfd.	100	500,000	7.00	43.66	37.17
19⅜	15	15⅛	22½	14	92⅜	25½	27,100	133,800	Amer. Solvents & Chem.	No	181,000		2.56	1.69
30	27½	27½	33½	25½	138	123½	5,700	31,500	conv. $3 cum. pfd.	No	113,000	3.00	8.01	6.71
16⅜	11	11½	17⅜	8½	49½	7	22,500	217,700	Amer. Zinc. Lead, & Smelt.	25	200,000		11 mo. 0.76	Nil
71½	69	69	79⅛	56	111½	49½	1,300	15,400	6% cum. pfd.	25	97,000	6.00	11 mo. 7.41	5.99
81½	58	60	81½	58	140	70	1,322,400	3,974,300	Anaconda Copper Mining	50	8,828,000	7.00	1928 6.63	3.37
29½	23½	23½	29½	22½	49½	18½	27,500	64,600	Archer Dan. Midland	No	550,000	2.00	3 mo. 0.71	4.02
51⅜	42	45	51⅜	36½	77⅜	30	321,300	1,006,900	Atlantic Refining Co.	25	2,678,000	1.00	6.10	5.58
103⅜	84	89½	106	81½	140	67	28,300	100,500	Atlas Powder Co.	No	260,000	4.00	7.66	4.39
106	104	105½	106	101	106½	90	260	1,800	6% cum. pfd.	100	90,000	6.00	28.25	18.76
4	3⅛	3⅛	5½	3⅛	12⅜	4⅜	9,100	40,000	Butte & Sup. Mining	10	290,000	2.00	Nil	0.28
4	3	3	4⅛	3	9½	2	9,100	61,500	Butte Copper & Zinc	5	600,000		0.34	0.31
13½	9½	10⅞	15⅞	9½	32	10⅞	18,100	80,000	Certain-Teed Products	No	400,000		Nil	Nil
43½	25	33	45½	25	81½	45½	3,500	4,200	7% cum. pfd.	100	63,000		9 mo. 11.38	6.77
62	51	51	65	51	127½	53	700	800	Chile Copper	25	4,415,000	3.50	9 mo. 4.54	4.52
63	59½	62½	63⅜	59½	90	40	6,300	19,100	Colgate-Palmolive-Peet	No	2,000,000	2.50	4.03	2.60
190⅜	162	162	199	160½	344	105	75,500	481,500	Columbian Carbon	No	457,000	4.00	7.84	6.39
38	31⅜	32½	38	27½	63	20⅜	588,200	2,882,900	Comm. Solvents	No	2,435,000	1.00	1.51	1.32
111⅜	98½	105½	111⅜	87½	126⅜	70	225,700	521,300	Corn Products	25	2,530,000	3.00	5.49	4.35
146½	142	144	147	140	144½	137	700	3,660	7% cum. pfd.	100	250,000	7.00	62.59	50.98
43⅜	36⅜	36⅜	43⅜	28⅜	69⅛	21½	41,500	229,500	Davison Chem. Co.	No	504,000	1.00	3.34	1.58
41⅛	35⅜	40½	42½	30½	64⅛	24	10,500	33,700	Devoe & Raynolds "A"	No	160,000	2.40	4.52	5.95
112½	112	112½	112½	106½	115½	102	180	610	7% cum. 1st pfd.	100	16,000	7.00	67.59	64.02
145½	132½	133½	145½	112½	231	80	225,300	898,100	Dupont de Nemours	20	10,339,000	4.00	6.99	5.97
120½	118½	119½	120½	114½	119⅜	107½	2,100	15,500	6% cum. deb.	100	978,000	6.00	78.54	69.06
255½	231	249	255½	175½	264⅜	150	197,700	470,700	Eastman Kodak	No	2,263,000	5.00	1928 9.60	9.61
127½	126	126	127½	120½	128	117	140	840	6% cum. pfd.	100	62,000	6.00	1928 326.17	326.68
55⅛	45	50⅛	55⅛	38⅛	54⅜	23⅜	188,900	526,300	Freeport Texas Co.	No	730,000	4.00	5.60	4.49
79⅛	60½	60⅜	71⅛	49⅛	94⅜	42½	189,900	528,500	General Asphalt Co.	No	411,000	4.00	3.65	2.79
37	29	9⅜	38	27½	64½	26	60,600	261,600	Glidden Co.	No	688,000	2.00	3.57	3.55
105	101	101	105½	98⅛	106½	95	950	3,150	7% cum. prior pref.	100	74,000	7.00	39.51	32.69
84½	82	82	85	78⅛	130	80	1,100	4,000	Hercules Powder Co.	No	568,000	3.00	5.95	22.04
118½	117½	118⅛	118⅜	117	121	112½	200	700	7% cum. pfd.	100	114,000	7.00	38.16	35.35
117	112	112	124	90	135	68½	4,800	36,500	Industrial Rayon	No	191,000		7.26	8.68
8⅛	6	6⅛	8⅛	4⅛	17⅞	4	35,200	89,200	Intern. Agric.	No	444,000		0.79	1.66
67⅛	57	65⅛	67⅛	54⅛	88⅛	40	6,800	13,000	7% cum. prior pfd.	100	100,000	7.00	10.54	14.47
44⅛	34⅛	34⅛	44⅛	31⅛	72⅛	25	1,126,600	4,095,600	Intern. Nickel	No	13,781,000	1.00	1.47	1.05
88⅛	80	88⅛	88⅛	69	80⅛	61½	2,940	12,170	Intern. Salt	100	61,000	6.00	11.32	7.23
136⅛	106⅞	110⅛	148⅛	106⅛	242⅛	90	214,000	761,500	Johns-Manville Corp.	No	750,000	3.00	8.09	6.75
25	21½	24	25	20⅛	42	20	6,500	16,900	Kellogg (Spencer)	No	598,000	1.60	2.36	3.42
80	68½	70	81⅞	52⅛	113⅞	40	25,400	256,500	Liquid Carbonic Corp.	No	311,000	4.00	6.12	6.76
37⅛	29	31	37⅛	25½	59	21½	142,600	179,800	McKesson & Robbins	No	1,117,000	2.00	6 mo. 1.50	3.77
49½	42	43	49½	41⅛	63	40	7,200	12,900	conv. 7% cum. pref.	50	426,000	3.50	6 mo. 5.13	11.51
39⅜	28⅛	31	39⅜	28	46	30½	9,500	15,200	MacAndrews & Forbes	No	384,000	2.60	9 mo. 2.21	3.30
100	94⅛	95	100	93	107½	104	210	800	6% cum. pfd.	100	28,000	6.00	9 mo. 44.84	65.48
50⅛	45½	46½	51⅛	37½	72⅛	29	59,700	348,100	Mathieson Alkali	No	637,000	2.00	3.31	2.95
127	127	127	127	115	125	120	30	280	7% cum. pfd.	100	28,000	7.00	93.91	84.50
63½	52	59	63¾	48⅛	80½	47	60,200	93,800	Monsanto Chem.	No	404,000	1.25	2.83	3.76
38⅛	32	34½	39½	29	58	15	26,300	117,200	National Dist. Prod.	No	275,000	2.00	1.32	Nil
173	150	151½	189½	137	210	129½	5,900	46,300	National Lead	100	310,000	5.00	25.49	11.45
141	139	141	142	138½	141½	138	1,140	3,260	7% cum. "A" pfd.	100	244,000	7.00	41.95	24.10
119	117	118	119	116	123⅜	115	450	1,700	6% cum. "B" pfd.	100	103,000	6.00	82.47	40.34
78⅛	75½	75½	85	51	103	143	1,000	6,900	Newport $3 cum. conv. "A"	50	130,000	3.00	29.79	5.55
55⅛	42½	48⅛	55⅛	26⅛	60⅞	22	101,700	244,200	Penick & Ford	No	434,000		3.97	2.56
110	110	110	110	107	110	100	20	140	7% cum. pfd.	100	33,000	7.00	73.33	53.42
76⅛	66½	75	76⅛	52⅛	98	43⅛	56,900	124,100	Proctor & Gamble	No	6,410,000	2.00	6 mo. 1.82	2.96
27½	25	25½	27½	21⅛	30⅛	20	138,400	416,500	Pure Oil Co.	25	3,038,000	1.50	3.06	0.97
114½	112⅜	112⅜	114½	112½	116	108	1,040	2,580	8% cum. pfd.	100	130,000	8.00	40.09	16.82
56⅛	53	55	56⅛	49½	64	43½	98,300	383,300	Royal Dutch		993,000		1928 24.09%	24.10%
54⅛	44	44	57⅛	44	94	38⅛	52,100	207,600	St. Joseph Lead	10	1,952,000	2.00	6 mo. 2.22	2.30
25½	23	23⅞	25½	21	31⅛	19	115,300	310,100	Shell Union Oil.	No	13,069,000	1.40	9 mo. 1.39	2.04
75	65⅛	74⅛	75	55⅛	31⅛	51⅛	276,300	594,300	Standard Oil, Calif.	No	13,016,000	2.50	1928 3.66	3.19
84⅞	72⅛	83⅛	84⅛	58	83	48	1,895,900	4,026,200	Standard Oil, N. J.	25	25,419,000	1.00	1928 4.43	1.52
40⅜	34⅞	39⅞	40⅜	31⅛	48⅛	31⅛	549,100	1,125,000	Standard Oil, N. Y.	25	17,380,000	1.60	1928 2.28	0.67
17	13⅛	14⅛	17	13	20⅛	9⅛	40,300	89,600	Tenn. Copper & Chem.	No	857,000	1.00	1928 1.48	0.51
59⅛	57	58⅛	59⅛	50⅞	71⅛	50	160,300	675,600	Texas Corp.	25	9,851,000	3.00	4.91	5.34
65⅛	60½	60⅞	67⅛	54⅛	85⅛	42½	119,100	629,300	Texas Gulf Sulphur	No	2,540,000	4.00	6.40	5.72
106⅛	89	89⅛	106⅛	76	140	59	598,000	2,348,300	Union Carbide & Carb.	No	9,208,000	2.40	3.94	3.72
84	65⅛	76⅛	84	44⅛	111⅛	40⅛	242,200	819,200	United Carbon Co.	No	393,000		1.75	1.99
106⅛	87⅛	89½	139⅛	87⅛	243⅛	95	104,000	729,200	U. S. Ind. Alc. Co.	No	373,000	6.00	12.63	10.29
143⅛	103	133⅛	143⅛	49⅛	116⅛	37⅛	634,000	1,567,800	Vanadium Corp. of Amer.	No	379,000	3.00	5.04	4.53
8⅛	6⅛	6½	8⅛	5⅛	24⅛	3⅛	37,000	84,400	Virginia Caro. Chem.	No	479,000		Nil	0.69
34⅛	28⅛	28⅛	34⅛	26⅛	65⅛	15	5,400	20,300	6% cum. part. pfd.	100	214,000		3.06	7.57
82⅛	79	79	82⅛	78	97⅛	69	900	3,900	7% cum. prior pfd.	100	144,000	7.00	12.35	20.09
55⅛	47	50	59⅛	37	94⅛	30	4,800	28,100	Westvaco Chlorine Prod.	No	123,000	2.00	4.32	3.60
NEW YORK CURB														
10⅛	8⅛	10	10⅛	7⅛	23	6	400	1,800	Acetol Prod. conv. "A"	No	60,000		1928 2.27	
31	22	31	34	19	43⅛	15	6,950	14,450	Agfa Ansco Corp.	No	300,000		Nil	
356	335	350	556	275	539½	146	6,200	17,100	Aluminum Amer.	No	1,473,000		1928 8.03	5.00
109	107½	109	109	105⅛	110	103	2,000	14,100	6% cum. pfd.	100	1,473,000	6.00	1928 14.04	10.26
232	177	204	232	108	280	99⅛	3,800	7,900	Aluminum Ltd.	No	573,000		1928 0.02	
35⅛	29⅛	30⅛	37	25⅛	80	20⅛	334,100	1,056,100	Amer. Cyanamid "B"	No	1,260,000	1.60	1.56	3.68
41	28	34⅛	41	15⅛	45⅛	1	77,000	101,600	Anglo-Chilean Nitrate	No	1,757,000		6 mo. Nil	Nil

1930 April High	1930 April Low	1930 Last	1930 High	1930 Low	1929 High	1929 Low	Sales In April	Sales During 1930	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$	1929	1928
6⅜	4⅛	5½	6½	4⅛	35½	3	2,000	6,400	Assoc. Rayon Corp.	No	1,200,000				
60¾	50	56	60⅜	39½	87½	30½	5,900	21,900	conv. 6% cum. pfd.	100	200,000	6.00			
5½	3⅜	5¼	5½	2⅝	10⅜	3½	1,800	11,000	Brit. Celanese Am. Rcts.	105	2,200,000				
28	23	24	35	23	57½	20	2,600	17,300	Celanese Corp. of Amer.	No	1,000,000			1.07	0.67
80	82	82	90	80	122	80	1,000	10,000	7% cum. part. 1st pfd.	100	115,000	7.00		15.51	12.00
85	80	85	88	81	100	80	325	2,450	7% cum. prior pfd.	100	115,000	7.00		27.02	20.53
16½	15	16½	20	13½	50	12	300	7,700	Celluloid Corp.	No	195,000		1928	1.29	0.86
102½	90½	90½	103	90½	110	82	50	650	7% cum. 1st part. pfd.	No	24,000	7.00	1928	17.33	9.96
12⅜	12¼	12¼	13¼	10⅜	25½	12	600	4,500	Courtaulds, Ltd.	1£	24,000,000		1928	19.88%	34.88%
100	72¼	100	100	71	100⅛	50	2,000	3,000	Dow Chemical	No	480,000	2.00			
21	15½	18	21	13¼	22	14½	7,000	17,200	Duval Texas Sulphur	No	500,000				
12½	8½	11	14⅞	8	34⅜	10	3,300	18,000	General Ind. Alc.	No	115,000				
166½	150¼	166½	166½	131¼	209	115	77,200	177,900	Gulf Oil	25	4,415,000	1.50		9.83	8.06
21	20	20½	23	20	41½	17⅜	1,100	2,800	Heyden Chemical Corp.	10	150,000		1928	2.02	1.02
6	6	6	7	5⅜	11⅛	6⅜		1,300	Imperial Chem. Ind.	1£			1928	12.15%	10.23%
12½	10	10	15	10	27	13½	2,900	3,900	Monroe Chem.	No	100,000	1.50		2.54	1.76
41	35	35	42	24	52	21½	4,600	35,500	Newport Co.	No	405,000	2.00		3.28	1.30
78	75	75	79½	74⅛	111⅛	65	300	900	Shawinigan W. & P.	No	1,867,000	2.50		2.35	2.17
85	85	85	85	80	105⅛	75½	110	210	Sherwin-Williams Co.	25	594,000	4.00		7.85	6.99
34½	24	25⅛	34½	18	48½	14⅛	10,410	83,910	Silica Gel Corp.	No	600,000				
59⅛	55¾	56⅜	59⅞	49⅛	63	45	192,500	641,500	Standard Oil Ind.	25	13,927,000	2.50	1928	8.33	3.26
32½	30	30⅜	34½	30	149⅞	121½	11,700	18,200	Swift & Co.	100	1,500,000	8.00		8.71	9.87
22¾	18	18	22¾	18	550	111	4,900	4,900	Tubize "B"	No	79,000	10.00			
34½	30	30¾	42	19½	115	15	1,400	6,500	United Chemicals	No	122,000			0.74	
39½	36	37	44	32	61½	25½	1,200	18,600	$3 cum. part. pfd.	No	120,000	3.00		2.61	
58	50⅜	53⅞	58	42	90⅜	36⅛	3,500	14,100	U. S. Gypsum Co.	20	765,000	1.60		3.98	7.21
									CLEVELAND						
138	136	136	138	125	98¾	92	220	2,236	Cleve-Cliffs Iron	No	498,000	5.00	1928	8.41	3.80
85	83½	85	85	80	105¼	75	520	1,759	Sherwin-Williams Co.	25	594,000	4.00		7.85	6.99
									CHICAGO						
46½	43	43	46½	35	52	36	950	13,400	Abbott Labs.	No	120,000	2.00		4.92	4.00
12⅜	10	10	15	10	26½	12	3,827	6,717	Monroe Chem.	No	100,000	1.50		2.54	1.76
32	29	29	35	27	51	30	545	1,370	$3.50 cum. pref.	No	30,000	3.50		13.35	10.32
31⅞	30¼	30¾	33¼	30¼	145	123	16,600	44,810	Swift & Co.	100	1,500,000	8.00		8.71	9.87
									CINCINNATI						
73	67	73	73	53½	100	44¼	6,541	21,790	Proctor & Gamble.	No	6,410,000	2.00	6 mo.	1.82	2.96
									PHILADELHPIA						
97½	96	96	98	96	116	89	800	2,600	Pennsylvania Salt	50	150,000	5.00		10.64	8.27
									MONTREAL						
3	2¼	2½	3¾	2¼	22½	2	2,875	6,800	Asbestos Corp.	No	200,000			Nil	Nil
14½	12	12½	15	9	68	12	53	900	7% non-cum pfd.	100	75,000			0.24	3.35
8½	7⅛	8	10½	7	45	5	8,962	38,600	Can. Ind. Alcohol "A"	No	969,000	1.52		1.90	2.87
82⅛	75½	77	82⅛	75	111	65	30,242	86,650	Shawinigan W. & P.	No	2,178,000	2.50		2.35	2.17

The Industry's Bonds

1930 April High	1930 April Low	1930 High	1930 Low	1929 High	1929 Low	Sales In April	Sales During 1930	ISSUE	Date Due	Int. %	Int. Period	Author-ized $
								NEW YORK STOCK EXCHANGE				
105	103⅜	105	102½	106½	103	50	269	Amer. Agric. Chem., 1st ref. s. f. 7½s.	1941	7½	F. A.	30,000,000
99½	97½	100½	96	99½	99¾	76	398	Amer. Cyan. deb. 5s.	1942	5	A. O.	5,000,000
108½	106	108½	100	135	95	1,108	2,148	Amer. I. G. Chem. conv. 5½s.	1949	5½	M. N.	30,000,000
102⅛	100½	102⅛	100⅜	102⅜	98	349	1,227	Am. Smelt & Ref. 1st. 5s. "A"	1947	5	A. O.	38,000,000
96	92½	96	83½	100	79	227	615	Anglo-Chilean s. f. deb. 7s.	1945	7	M. N.	16,500,000
103	101¾	103	100	103½	99⅜	63	350	Atlantic Refin. deb. 5s.	1937	5	J. J.	15,000,000
103	101	104⅛	100¼	103	98¼	24	165	By-Prod. Coke 1st 5½s "A"	1945	5½	M. N.	8,000,000
101⅜	101⅜	102½	100½	103	96½	100	145	Corn Prod. Refin. 1st s. f. 5s.	1934	5	M. N.	10,000,000
87½	83½	87½	74	104	76	543	1,194	Lautaro Nitrate conv. 6s.	1954	6	J. J.	
101¼	98½	101¼	98	100½	96	262	1,271	Pure Oil s. f. 5½% notes	1937	5½	F. A.	20,000,000
96⅜	95½	97	93⅞	98⅛	90	73	340	Solvay Am. Invest. 5s.	1942	5	M. S.	
103¾	102½	103¾	100¾	103½	100	290	2,007	Standard Oil, N. J. deb. 5s.	1946	5	F. A.	120,000,000
97½	96	97¾	95	100	91¾	283	1,268	Standard Oil, N. Y. deb. 4½s.	1951	4½	J. D.	50,000,000
102	100½	102	97½	110	88	95	449	Tenn. Copp. & Chem. deb. 6s. "B"	1944	6	M. S.	5,000,000
								NEW YORK CURB				
102¾	102	102¾	101½	103½	99½	120	683	Aluminum Co., s. f. deb. 5s.	1952	5	M. S.	60,000,000
100	98½	100	97½	98⅝	97⅜	137	500	Aluminum Ltd., 5s.	1948	5	J. J.	20,000,000
100	94	100½	93½	125	99	33	129	Amer. Solv. & Chem. 6½s.	1936	6½	M. S.	2,200,000
75	69⅞	90	69⅞	...	...	42	138	General Ind. Alc., 6½s.	1944	6½	M. N.	2,500,000
79½	78	80	57	95	60	69	332	General Rayon 6s. "A"	1948	6	J. D.	5,400,000
102¾	100	103	99¼	101¼	97¾	111	384	Gulf Oil, 5s.	1937	5	J. D.	35,000,000
102⅜	101	103	100	...	...	97	342	Sinking Fund deb. 5s.	1947	5	F. A.	35,000,000
100	99¼	100¼	95½	100½	93	256	631	Koppers G. & C. deb, 5s.	1947	5	J. D.	25,000,000
94½	93½	95	90⅜	94½	88½	141	447	Shawinigan W. & P. 4½s.	1967	4½	A. O.	200,000,000
94	93½	94½	90	...	...	38	150	4½s., series "B"	1968	4½	M. N.	25,000,000
106	103½	106	97	...	...	8	185	Silica Gel Corp. 6½s	1932	6½	A. O.	1,700,000
101	100⅜	101¼	100	102	97⅛	184	804	Swift & Co., 5s.	1944	5	J. J.	50,000,000
102¾	102¾	103½	101	104	98	26	123	Westvaco Chlorine Prod. 5½s.	1937	5½	M. S.	2,500,000

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The Trend of Prices

Industrial Activity Continues To Lag Behind Last Year

Basic Industries' Output Considerably Less Than Usual for Active First Quarter—Wholesale Prices Reach Lowest Level Since 1916—High Volume of Alkali Shipments Continues Encouraging—Calcium Chloride and Copper Sulfate Feature in Rather Dull Market.

During the past month industrial activity continued off in most lines, the only encouraging feature being the increased production of automobiles, confined chiefly to the low-priced lines, and greater production in the lumber industry. For the first quarter of the year, taken as a whole, output of basic industries was considerably smaller than in the unusually active first quarter of 1929 and smaller than in any other first quarter since 1925, according to the Federal Reserve Board.

In the steel and automobile industries output for the first three months, though smaller than in 1929, was about the same as in the corresponding months in 1928, while in most of the other major industries it was smaller than in either of the two preceding years.

Building contracts awarded increased substantially in March as is usual at this season, according to report of the F. W. Dodge Corp.

In comparison with a year ago, a large increase in contracts for public works and utilities was more than offset by a decrease in residential buildings. Average daily awards in the first half of April were somewhat larger than in March, but continued smaller than a year ago.

Factory employment and pay rolls, which usually increase during March, changed little from February and continued to be considerably smaller than in other recent years.

The number of workers employed in the automobile industry increased somewhat less than is usual at this season and reductions in employment and in earnings were reported in the iron and steel, machinery, and car building industries.

Freight carloadings, which have been at low levels in recent months, did not show the usual seasonal increase during March. Departmental store sales continued in smaller volume than a year ago.

Wholesale prices, which began to decline last Summer, continued to move downward in March to the lowest level since 1916, the decline reflecting chiefly sharp decreases in prices of agricultural products.

Prices of imported raw materials, such as sugar, coffee, and silk, fluctuated around the low levels reached in February. The price of silver advanced slightly from the low point reached early in March.

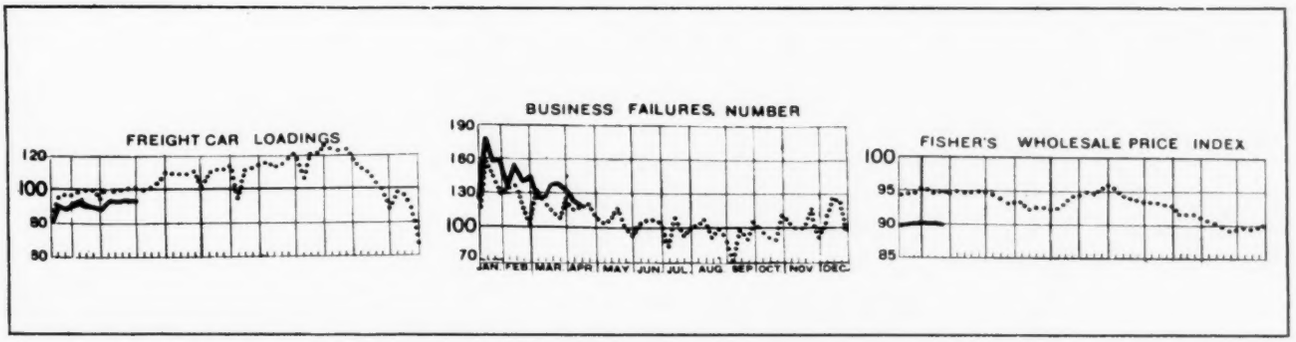
In the last week in March and the first week in April there were advances in prices of agricultural products, especially grains and cotton, while the price of steel declined. On April 15, the price of copper was sharply reduced, and in the same week prices of a number of other important commodities also declined.

At member banks in leading cities, total loans and investments increased in the four-week period ended April 16, reflecting a growth of $184,000,000 in loans on securities and of $80,000,000 in investments, offset in part by a further decrease of $186,000,000 in "all other" loans.

Member bank indebtedness at the reserve banks and total reserve bank credit declined further between the weeks ended March 15 and April 12, reflecting primarily additional imports of gold from the Orient.

During April, the rediscount rates of the Federal reserve banks of Richmond, Atlanta, St. Louis, Minneapolis, and Dallas were reduced to 4 per cent, the rate prevailing at all of the reserve banks except New York where the rate is 3½ per cent.

The continued high volume of alkali shipments continues to lend encouragement to the chemical industry. Shipments are only from two to three per cent below those of last year, which was a period of record activity. Aside from that, however, the chemical markets are generally in poor condition with demand far below that of last year. This is especially true of those commodities which depend for a large part of their business upon the demands of the automobile industry, which are still far below normal despite some increase in low-priced car production. Two more or less seasonal items—copper sulfate and calcium chloride—are reported as being in excellent demand and in strong position. In fact the sales of the latter are to date 25 per cent ahead of last year, which in turn was a record year.



Business indicators prepared by the Department of Commerce. The weekly average 1923-25 inclusive = 100
The solid line represents 1930 and the dotted line 1929.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

Acetone — While shipments are below the level established during April of last year, the market continues fairly firm at quoted prices. The saving factor in the situation is believed to be the fact that consumers are holding no stocks and that anything like a resumption of normal activity will be felt immediately in this market. The automobile industry holds the key to the situation in this market and until car production speeds up there can be no extended improvement of activity.

Acid Acetic — Conditions have not improved noticeably and continue about the same as when last reported. Ethyl acetate, butyl acetate and rayon continue off and as a result these large consuming fields are restricted in extent. In addition, as might be expected, stocks of lime are plentiful, stocks as of March 1 totaling 20,719,119 pounds. All things considered, the market is weak and unsettled, although manufacturers look for improved conditions during the second quarter.

Acid Formic — It has been reported that the leather and dye industries are continuing with a steady demand for this material which continues firm in a fairly active market.

Acid Muriatic — Underlying conditions continue rather steady in this market with routine demand from the heavy industries using this material.

Acid Sulfuric — Demand continues in fairly routine volume from the various consuming industries and shipments are going forward against contract in a firm market. Sulfuric acid produced by eighty superphosphate manufacturers during February amounted to 191,778 short tons, Department of Commerce announces, compared with 198,852 tons during January and with 195,690 tons during February last year. Amount consumed in manufacture of fertilizers, including shipments to other than fertilizer producers, amounted to 220,344 tons during the month, compared with 246,040 tons during January, and with 196,000 tons during February a year ago. Stocks at the end of the period were 95,905 tons, compared with 100,822 tons at the close of January, and with 119,584 tons at the close of February, 1929.

1929 High	1929 Low	1928 High	1928 Low		Current Market		1930 High	1930 Low
.21	.18½	.26	.18½	Acetaldehyde, drs 1c-1 wks...lb.	.18½	.21	.21	.18½
.31	.27			Acetaldol, 50 gal dr.....lb.	.27	.31	.31	.27
				Acetamide.....lb.	1.20	1.35	1.35	1.20
.24	.21	.24	.23	Acetanilid, tech, 150 lb bbl...lb.	.21	.23	.23	.21
				Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.27	.28	.29	.27
.35	.28	.35	.29	Acetin, tech drums.....lb.	.30	.32	.32	.30
.32	.30	.....	.....	Acetone,.....lb.	.11	.12	.12	.11
.16	.11	.15	.13	Acetone Oil, bbls NY.....gal.	1.15	1.25	1.25	1.15
1.25	1.15	1.75	1.65	Acetyl Chloride, 100 lb cby...lb.	.55	.68	.68	.55
.68	.45	.45	.42	Acetylene Tetrachloride (see tetrachlorethane).....				
				Acids				
				Acid Acetic, 28% 400 lb bbls				
3.88	3.88	3.88	3.38	c-1 wks.....100 lb.	.....	3.88	3.88	3.88
13.68	13.68	13.68	11.92	Glacial, bbl c-1 wk.....100 lb.	.....	13.68	13.68	13.68
1.00	.98	1.00	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	1.00	.98
.80	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
2.25	1.60	2.25	1.60	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.60	.51	.60	.57	Benzoic, tech, 100 lb bbls....lb.	.51	.53	.53	.51
				Boric, crys. powd, 250 lb. bbls.....lb.	.06¾	.07¾	.07¾	.06¾
.07¾	.05¾	.11	.08¾	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
1.25	1.25	1.25	1.25	Butyric, 100% basis cbys.....lb.	.85	.90	.90	.85
.90	.85	.90	.85	Camphoric.....lb.	.....	5.25	5.25	5.25
5.25	4.85	4.85	4.85	Chlorosulfonic, 1500 lb drums				
				wks.....lb.	.04½	.05½	.05½	.04½
.05½	.04½	.16	.15	Chromic, 99%, drs extra.....lb.	.16½	.18	.19	.16½
.23	.17½	.30	.25	Chromotropic, 300 lb bbls....lb.	1.00	1.06	1.06	1.00
1.06	1.00	1.06	1.00	Citric, USP, crystals, 230 lb. bbls.....lb.	.46	.59	.59	.46
.70	.46	.44½	.59	Cleve's, 250 lb bbls.....lb.	.52	.54	.54	.52
.59	.52	.97	.95	Cresylic, 95%, dark drs NY..gal.	.55	.60	.70	.55
.54	.60	.70	.68	97-99%, pale drs NY.....gal.	.60	.70	.77	.60
.77	.72	.72	.72	Formic, tech 90%, 140 lb. cby.....lb.	.10½	.12	.12	.10½
.12	.10½	.12	.11	Gallic, tech, bbls.....lb.	.50	.55	.55	.50
.12	.50	.55	.50	USP, bbls.....lb.	.....	.74	.74	.74
.55	.74	.74	.74	Gamma, 225 lb bbls wks.....lb.	.77	.80	.80	.77
.80	.74	1.06	1.00	H, 225 lb bbls wks.....lb.	.65	.70	.70	.65
.99	.80	.63	.57	Hydriodic, USP, 10% soln cby lb.	.....	.67	.67	.67
.72	.67	.67	.67	Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.48	.45
.67				Hydrochloric, CP, see Acid Muriatic.....				
.48	.45	.48	.45	Hydrocyanic, cylinders wks...lb.	.80	.90	.90	.80
.....	.....			Hydrofluoric, 30%, 400 lb bbls wks.....lb.	.....	.06	.06	.06
.90	.80	.90	.80	Hydrofluosilicic, 35%, 400 lb bbls wks.....lb.	.....	.11	.11	.11
.06	.06	.06	.06	Hypophosphorous, 30%, USP, demijohns.....lb.	.....	.85	.85	.85
.11	.11	.11	.11	Lactic, 22%, dark, 500 lb bbls lb.	.04	.04½	.05	.04
.85	.85	.85	.85	44%, light, 500 lb bbls.....lb.	.11½	.12	.12	.11
.05½	.04½	.06	.04½	Laurent's, 250 lb bbls.....lb.	.40	.42	.42	.40
.12½	.11	.13½	.12	Malic, powd., kegs.....lb.	.45	.60	.60	.45
.42	.40	.54	.52	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
.60	.48	.60	.48	Mixed Sulfuric-Nitric.....				
.65	.60	.65	.60	tanks wks.....N unit	.07	.07½	.07½	.07
.07¼	.07	.08	.07¾	tanks wks.....S unit	.008	.01	.01	.008
.01	.008	.01½	.01	Monochloroacetic, tech bbl..lb.	.18	.21	.21	.18
.21	.18	.21	.18	Monosulfonic, bbls.....lb.	1.65	1.70	1.70	1.65
1.70	1.65	.65	.65	Muriatic, 18 deg, 120 lb cbys				
1.40	1.35	1.40	1.35	c-1 wks.....100 lb.	.....	1.35	1.35	1.35
1.00	1.00			tanks, wks. 100 lb.		1.00	1.00	1.00
....	1.45	1.80	1.70	20 degrees, cbys wks...100 lb.	.....	1.45	....	1.45
.95	.85	.95	.85	N & W, 250 lb bbls.....	.85	.95	.95	.85
.59	.55	.59	.55	Naphthionic, tech, 250 lb.....	.....	Nom.	Nom.	.....
				Nitric, 36 deg, 135 lb cbys c-				
5.00	5.00	5.00	5.00	wks.....100 lb.	.....	5.00	5.00	5.00
				40 deg, 135 lb cbys, c-1				
6.00	6.00	6 00	6.00	wks.....100 lb.	.....	6.00	6.00	6.00
.11¼	.11	.11½	.10¾	Oxalic, 300 lb bbls wks NY...lb.	.11¼	.11¾	.11¾	.11½
.14	.08	.08½	.08	Phosphoric 50%, U. S. P.....lb.	.....	.14	.14	.14
.16	.14	.16	.16	Syrupy, USP, 70 lb drs....lb.	.....	.14	1	.14
.70	.65	.50	.50	Picramic, 300 lb bbls.....lb.	.65	.70	.70	.65
.50	.30	.50	.40	Picric, kegs.....lb.	.30	.50	.50	.30
				Pyrogalic, crystals.....				
1.40	.86	.86	.86	.....lb.	1.30	1.40	1.40	1.30
.42	.33	.32	.27	Salicylic, tech, 125 lb bbl.....lb.	.33	.37	.37	.33
.16	.15	.16	.15	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
				Sulfuric, 66 deg, 180 lb cbys				
1.95	1.60	1.95	1.60	1c-1 wks.....100 lb.	1.60	1.95	1.95	1.60
15.50	15.50			tanks, wks. ton		15.50	15.50	15.50
1.65	1.50	1.37½	1.20	1500 lb dr wks.....100 lb.	1.50	1.65	1.65	1.50
1.42½	1.27½	1.12½	1.12½	60°, 1500 lb dr wks....100 lb.	1.27½	1.42½	1.42½	1.27½
				Oleum, 20%, 1500 lb. drs 1c-1				
18.50	18.50	18.50	18.50	wks .....ton	.....	18.50	18.50	18.50
42.00	42.00	42 00	42.00	40%, 1c-1 wks net .....ton	.....	42.00	42.00	42.00

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

Albumen — Due to the uncertainties of the tariff situation prices on egg albumen have fluctuated quite widely during the past month. Prices went much higher and demand was very active in anticipation of a tariff as passed by the Senate. But then in conference the tariff was placed back at the old level and demand fell off and prices declined again. At present the edible is at 70c@ 73c lb., and technical is at 65c @ 70c lb.

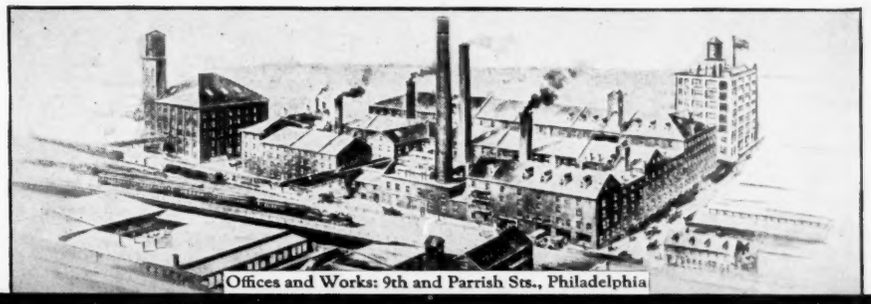
Alcohol — This market does not improve, which is to be expected since the season of demand is over. Prices have been weak and in some instances have been established on a basis of 43c per gallon for C. D. 1 in drums and 42c per gallon for C. D. 5 in drums. The quoted price schedule has not been adhered to, and sales have been reported at three cents to four cents per gallon below published prices. In any event the market is weak and dominated by highly competitive conditions.

Ammonia — The continued cold weather for this season of the year has maintained the volume of anhydrous ammonia shipments about 25 per cent below last year's level. In spite of this, the market continues in good condition and prices are firm. The low ebb reached by silk and rayon producers has made itself felt to a certain extent in the market, for aqua notwithstanding, conditions are quite firm and producers adhering too quoted prices. During 1929, there was an increase in value of $59,291 in total exports of ammonia from the United States as compared with the 1928 figure of $314,990. The total value of ammonia exports for 1929 was $374,281.

Ammonium Bicarbonate — Prices on this material continue firm at quoted levels with domestic producers having the situation well in hand. Imports into the United States of carbonate and bicarbonate of ammonia, which are recorded together, reached a high figure of 678 short tons valued at $67,327 in 1928. In 1929, there was a marked drop in these imports of nearly 250 tons with a corresponding drop in value of over $24,000. Total figures on imports during 1929 were 430 short tons valued at $42,970. There seems good reason to believe, however, that the greater part of this decline was due to lessened imports of the bicarbonate, since domestic producers of the latter material, being in position to care for domestic needs, made a special drive for that business during 1929.

Ammonium Sulfate — Demand has been improving steadily, and, as a result, the market is much stronger and firmer than it has been. Quotations have been maintained at $2.10 per 100 lbs. although

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
.40	.30	.40	.30	Tannic, tech, 300 lb bbls...lb.	.30	.40	.40	.30
.38½	.38	.38	.34½	Tartaric, USP, crys, powd, 300 lb. bbls.....lb	.38	.38½	.38½	.38
.85	.85	.85	.85	Tobias, 25o lb bbls.....lb.	.....	.85	.85	.85
2.75	2.75	2.75	2.75	Trichloroacetic bottles.....lb.	.....	2.75	2.75	2.75
2.00	2.00	2.00	2.00	Kegs.....lb.	.....	2.00	2.00	2.00
2.25	1.00	1.25	1.00	Tungstic, bbls.....lb.	1.40	1.70	1.70	1.40
.47	.38	.55	.43	Albumen, blood, 225 lb bbls..lb.	.38	.40	.40	.38
.20	.12			dark,.....bbls., lb.	.12	.20	.20	.12
.83	.70	.84	.78	Egg, edible.....lb.	.....	.70	.75	69
.80	.70	.80	.70	Technical, 200 lb cases ..lb.	.65	.70	.73	.65
.65	.60	.65	.60	Vegetable, edible.....lb.	.60	.65	.65	.60
.55	.50	.55	.50	Technical.....lb.	.50	.55	.55	.50
				Alcohol				
.17¼	.17¼	.20	.18½	Alcohol Butyl, Normal, 50 gal drs c-l wks.....lb.	.17¼	.18½	.18½	.17¼
.18¼	.17¾	.19½	.18¼	Drums, 1-c-1 wks.....lb.	.17¼	.18¾	.18¾	.17¼
.17¼	.16¾	.19	.17¼	Tank cars wks.....lb.	.16¾	.17¼	.17¼	.16¾
1.67	1.67	2.25	1.75	Amyl (from pentane) drs c-l wks.....gal.	.....	1.67	1.67	1.67
1.80	1.42	1.80	1.70	Diacetone, 50 gal drs del..gal.	1.42	1.60	1.60	1.42
2.75	2.69½	3.70	2.65	Ethyl, USP, 190 pf, 50 gal bbls.....gal.	2.63	2.75	2.75	2.63
.71	.71	.55	.50	Anhydrous, drums.....gal.	.56	.60	.71	.56
.52	.49	.52	.48½	Completely denatured, No. 1, 188 pf, 50 gal drs drums extra.....gal.	.43	.45	.51	.43
.51	.48	.50	.43	No. 5, 188 pf, 50 gal drs. drums extra.....gal.	.42	.44	50	.42
.50	.46	.46	.41	Tank, cars.....gal.	.40	.42	.48	.40
1.30	1.00	1.25	1.00	Isopropyl, ref, gal drs.....gal.	.60	1.00	1.00	.60
1.00	1.00	1.00	1.00	Propyl Normal, 50 gal dr..gal.	.....	1.00	1.00	1.00
.82	.80	.82	.80	Aldehyde Ammonia, 100 gal dr lb.	.80	.82	.82	.80
.65	.65	.65	.65	Alpha-Naphthol, crude, 300 lb bbls.....lb.	.....	.65	.65	.65
.34	.32	.37	.35	Alpha-Naphthylamine, 350 lb bbls.....lb.	.32	.34	.34	.32
3.50	3.25	3.30	3.25	Alum Ammonia, lump, 400 lb bbls, lc-l wks.....100 lb.	3.30	3.50	3.50	3.30
5.50	5.00	5.50	5.25	Chrome, 500 lb casks, wks .....100 lb.	5.00	5.25	5.25	5.00
3.50	3.00	3.20	3.10	Potash, lump, 400 lb casks wks.....100 lb.	3.20	3.50	3.50	3.20
3.75	3.75	3.75	3.75	Soda, ground, 400 lb bbls wks.....100 lb.	.....	3.75	3.75	3.75
24.30	24.30	26.00	24.30	Aluminum Metal, c-l NY.100 lb.	.....	24.30	24.30	24.30
.20	.05	.40	.35	Chloride Anhydrous,.....lb.	.05	.15	.15	.05
.18	.17	.18	.17	Hydrate, 96%, light, 90 lb bbls.....lb.	.17	.18	.18	.17
.26	.25	.24	.18	Stearate, 100 lb bbls.....lb.	.25	.26	.26	.25
2.05	1.95	1.75	1.75	Sulfate, Iron, free, bags c-l wks.....100 lb.	1.95	2.05	2.05	1.95
1.40	1.40	1.40	1.40	Coml, bags c-l wks..100 lb.	.....	1.40	1.40	1.40
1.15	1.15	1.15	1.15	Aminoasobenzene, 110 lb kegs lb.	.....	1.15	1.15	1.15
				Ammonium				
.14½	.14	.14	.13½	Ammonia, anhyd, 100 lb cyl..lb.	.15½	.15½	.15½	.15½
.03¼	.03¼	.03	.03	Water, 26°, 800 lb dr del...lb.	.....	.03¼	.03¼	.03¼
				Acetate.....lb.	.28	.39	.39	.28
6.50	5.15			Bicarbonate, bbls., f.o.b. plant .....100 lb.	.....	5.15	5.15	5.15
.22	.21	.22	.21	Bifluoride, 300 lb bbls.....lb.	.21	.22	.22	.21
.12	.09	.09	.08¼	Carbonate, tech, 500 lb cs..lb.	.09	.12	.12	.09
5.15	4.45	5.15	4.45	Chloride, white, 100 lb. bbls wks.....100 lb.	4.45	5.15	5.15	4.45
5.75	5.25	5.75	5.25	Gray, 250 lb bbls wks....lb.	5.25	5.75	5.75	5.25
.11¼	.11	.11¼	.11	Lump, 500 lb cks spot...lb.	.11	.11¼	.11¼	.11
.16	.15	.16	.15	Lactate, 500 lb bbls.....lb.	.15	.16	.16	.15
.10	.06	.10	.06	Nitrate, tech, casks.....lb.	.06	.10	.10	.06
.34	.26	.38	.27½	Persulfate, 112 lb kegs.....lb.	.26	.30	.30	.26
.13	.12½	.18	.18	Phosphate, tech, powd, 325 lb bbls.....lb.	.11½	.12	.13	.11½
2.40	2.05	2.90	2.20	Sulfate, bulk c-l.....100 lb.	.....	2.10	2.10	2.10
2.45	2.05	3.00	2.50	Southern points.....100 lb.	.....	2.10	2.10	2.10
60.85	52.40	60.85	60.85	Nitrate, 26% nitrogen 31.6% ammonia imported bags c. i. f.....ton	.....	57.60	57.60	57.60
.48	.36	.60	.55	Sulfocyanide, kegs.....lb.	.36	.48	.48	.36
1.70	1.60	2.25	1.72	Amyl Acetate, (from pentane) drs..... lb.	.222	.236	.236	.222
.24	.23	.....	.....	Tech., drs.....lb.	.23	.24	.24	.23
				Alcohol, see Fusel Oil.....				
				Furoate, 1 lb tins.....lb.		5.00	5.00	5.00
.16½	.15	.16½	.15½	Aniline Oil, 960 lb drs.....lb.	.15	.16	.16	.15
.37	.34	.48	.41	Annatto, fine.....lb.	.34	.37	.37	.34
.90	.80	1.00	.90	Anthraquinone, sublimed, 125 lb bbls.....lb.	.50	.55	.90	.50
.10	.08½	.12	.09½	Antimony, metal slabs, ton lots .....lb.	.....	.07¾	.09½	.07¾
.10	.09	.12	.10	Needle, powd, 100 lb cs....lb.	.....	.09	.09½	.09
.18	.13	.18	.17	Chloride, soln (butter of) cbys.....lb.	.13	.17	.17	.13
.10	.08½	.12	.09½	Oxide, 500 lb bbls.....lb.	.....	.08½	.08¼	.08½
.26	.24	.....	.....	Salt, 66%, tins.....lb.	.....	.24	.24	.24
.20	.16	.20	.16	Sulfuret, golden, bbls.....lb.	.16	.20	.20	.16
.42	.38	.42	.38	Vermilion, bbls.....lb.	.38	.42	.42	.38
.19	.17	.19	.17	Archil, conc, 600 lb bbls.....lb.	.17	.19	.19	.17
.14	.12	.14	.12	Double, 600 lb bbls.....lb.	.12	.14	.14	.12
.16	.12	.16	.15	Triple, 600 lb bbls.....lb.	.12	.14	.14	.12
.18½	.18½	.16	.15	Argols, 80%, casks.....lb.	.....	.18½	.18½	.18½
.08	.08	.08	.08	Crude, 30%, casks.....lb.	.08	.08	.08	.08
.11	.09	.11	.10½	Arsenic, Red, 224 lb kegs, cs..lb.	.09	.11	.11	.09
.04½	.04	.04	.03½	White, 112 lb kegs.....lb.	.04	.04½	.04½	.04
15.00	4.75	14.75	14.75	Asbestine, c-l wks.....ton	.....	15.00	15.00	15.00



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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

some resale material has been available below this figure.

Antimony — The market has been dull and weak during the past month. Prices have declined considerably since it became apparent that the duty would be retained at the present rate. At the same time, buyers have lost interest completely and there has been a noticeable reaction from the buying which had been going on in anticipation of a higher duty. Metal is now at 7¾c lb. and needle, powdered, at 9c lb. in a dull market.

Beeswax — Prices have readjusted themselves since the first excitement following the anticipated higher tariff and this month are quoted at somewhat lower levels. Yellow is at 33c lb., refined at 37c lb., and white at 52c lb.

Benzol — A continued steady improvement in business continues to feature this market where all consuming industries are increasing demands appreciably over that which opened the year, and prices are firm.

Blood — Has moved into much stronger position during the past month due to smaller stocks available. Demand has been fair and prices are higher, reflecting the new strength of the market. New York is at $3.80 per unit, Chicago at $4.25 per unit, and South American at $4.00 per unit.

Borax — Continues to move in fairly good quantity. Competitive conditions which featured the market earlier in the year seem to have almost wholly disappeared and prices are quite firm. That the lowered prices have encouraged export as well as domestic sales is indicated by the 17 per cent gain in tonnage of 1929 exports accompanied by a decline in the value per ton of about $14 from the average value of the 1928 exports. The increase in the quantity exported was over 12,000 tons, from 67,851 tons in 1928 to 79,883 tons in 1929, whereas there was a decline in value of nearly $520,000. From 85 to 90 per cent of our exports go to European countries and 8 to 10 per cent to the countries of the Far East, according to the Department of Commerce.

Butyl Acetate — Although prices remain firm at established levels, demand for this material continues off and bids fair to continue in that fashion until there is more concerted activity in automobile production. There has been some improvement in the volume of low-priced car production, which has made for some slightly increased demand for this solvent but to date the volume has been far below that of last year.

Calcium Acetate — Stocks of this material continue to accumulate in the

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
				Barium			
60.00	57.00	57.00	47.00	Barium Carbonate, 200 lb bags wks....ton	58.00	60.00	58.00
.15	.14	.12½	.12	Chlorate, 112 lb kegs NY..lb.	.14	.15	.14
69.00	63.00	65.00	54.00	Chloride, 600 lb bbl wks...ton	63.00	69.00	63.00
.13	.12	.13½	.13	Dioxide, 88%, 690 lb drs...lb.	.12	.13	.12
.05½	.04¾	.04¾	.04¾	Hydrate, 500 lb bbls.....lb.	.04¾	.05½	.04¾
.08½	.08	.08	.07½	Nitrate, 700 lb casks.....lb.	.08	.08½	.08
24.00	23.00	24.00	23.00	Barytes, Floated, 350 lb bbls wks....ton	23.00	24.00	24.00
8.00	5.00	8.00	5.00	Bauxite, bulk, mines.....ton	5.00	8.00	8.00
.37	.34	.38	.36	Beeswax, Yellow, crude bags..lb.	.....	.34	.34
.42	.39	.43	.41	Refined, cases.....lb.	.....	.38	.38
.53	.51	.58	.56	White, cases.....lb.	.51	.53	.53
.65	.60	.70	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.60	.65	.65
				Benzene			
.23	.23	.23	.21	Benzene, 90%, Industrial, 8000 gal tanks wks.....gal.	.....	.21	.22
.23	.23	.23	.21	Ind. Pure, tanks works....gal.	.....	.21	.22
.74	.70	.74	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.65	.67	.74
1.00	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs.lb.	.....	1.00	1.00
.25	.25	.25	.25	Benzyl, Chloride, tech drs....lb.	.....	.25	.25
.26	.22	.26	.24	Beta-Naphthol, 250 lb bbl wk.lb.	.22	.24	.24
1.35	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35
.68	.60	.65	.63	Tech, 200 lb bbls.....lb.	.53	.65	.65
90.00	75.00	90.00	80.00	Blanc Fixe, 400 lb bbls wks..ton	75.00	90.00	90.00
				Bleaching Powder			
2.25	2.00	2.25	2.25	Bleaching Powder, 300 lb drs c-1 wks contract.....100 lb.	2.00	2.35	2.35
4.60	3.90	5.25	4.65	Blood, Dried, fob, NY.....Unit	.....	3.80	3.90
5.00	4.40	5.35	4.75	Chicago.....Unit	.....	4.25	4.50
4.70	4.25	5.05	4.50	S. American shipt.....Unit	.....	4.00	4.10
.35	.32	.35	.31	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.....	.35	.35
42.00	39.00	30.00	29.00	Bone, raw, Chicago.....ton	.....	39.00	39.00
.07	.06	.07	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07
.08½	.08½	.08½	.08½	Black, 200 lb bbls.....lb.	.....	.08½	.08½
35.00	30.00	37.00	31.00	Meal, 3% & 50%, Imp....ton	.....	31.00	31.00
.03½	.02½	.05	.2½	Borax, bags.....lb.	.02½	.03½	.03½
.14	.10½	.12	.10½	Bordeaux, Mixture, 16% pwd..lb.	.12	.14	.14
.14	.10	.10	.08	Paste, bbls.....lb.	.12	.14	.14
28.00	26.00	28.00	26.00	Brazilwood, sticks, shpmt....lb.	26.00	28.00	28.00
				Bromine, cases.....lb.	.45	.47	.47
1.20	.60	1.20	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20
1.25	.55	1.25	.55	Gold bulk.....lb.	.55	1.25	1.25
.195	.184	1.60	1.40	Butyl, Acetate, normal drs..... lb.	.192	.198	.20
.186	.181	1.55	1.35	Tank, wks.....lb.	.....	.186	.186
.70	.34	.70	.70	Aldehyde, 50 gal drs wks...lb.	.34	.44	.44
.....	.....			Carbitol s ee Diethylene Glycol Mono (Butyl Ether).....	.....	.....	.....
				Cellosolv e (see Ethylene glycol mono b utyl ether).....			
.50	.50			Furoate, tech., 50 gal. dr., lb.	.....	.50	.50
.36	.25	.36	.34	Propionate, drs.....lb.	.25	.27	.27
.60	.35	.60	.60	Stearate, 50 gal drs.....lb.	.25	.30	.30
.60	.57	.60	.57	Tartrate, drs.....lb.	.57	.60	.60
1.75	.75	2.00	1.35	Cadmium, Sulfide, boxes.....lb.	.90	1.40	1.75
				Calcium			
4.50	4.50	4.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	4.50	4.50
.09	.07	.09	.06	Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.09	.09
.06	.05	.06	.05	Carbide, drs.....lb.	.05	.06	.06
1.00	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00
25.00	22.75	27.00	25.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	22.75	22.75
20.00	20.00	23.00	20.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	20.00	20.00
52.00	42.00	52.00	52.00	Nitrate, 100 lb bags.....ton	42.00	43.00	43.00
1.25	1.25	.....	.....	Peroxide, 100 lb. drs.....lb.	.....	1.25	1.25
.08	.07	.08	.07	Phosphate, tech, 450 lb bbls lb.	.08	.08¾	.08¾
.26	.25			Stearate, 100 lb bbls.....lb.	.25	.26	.26
88.15	82.15			Calurea, bags S. points. c.i.f. ton	.....	88.65	88.65
18	.18	.18	.18	Camwood, Bark, ground bbls..lb.	.....	.18	.18
24	.22	.28	.22	Candelilla Wax, bags.....lb.	.....	.19	.20
.....	.....			Carbitol, (See Diethylene Glycol Mono Ethyl Ether)	.....	.....	.....
.15	.08	15	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15
.12	.12	12	12	Black, 100-300 lb cases 1c-1 NY.....lb.	.....	.12	.12
.06	.05½	.06	.05½	Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	.06	.06
.06	.06	.06	.06	Dioxide, Liq. 20-25 lb cyl...lb.	.....	.06	.06
.07½	.06½	.07½	07	Tetrachloride, 1400 lb drs delivered.....lb.	.06½	.07	.07
.43	.35	.58	.45	Carnauba Wax, Flor, bags....lb.	.....	.34	.37
.40	.33	.60	.40	No. 1 Yellow, bags.....lb.	.....	.31	.33
.32	.28	.38	.34	No. 2 N Country, bags.....lb.	.26	.27	.27
.36	.31	.56	.38	No. 2 Regular, bags.....lb.	.28	.29	.30
.25	.24	.32	.25	No. 3 N. C.....lb.	.22	.23	.23
.26	.24	.32	25½	No. 3 Chalky.....lb.	.22	.23	.23
.17	.15	.18¼	.14½	Casein, Standard, ground.....lb.	.14	.15	.15½

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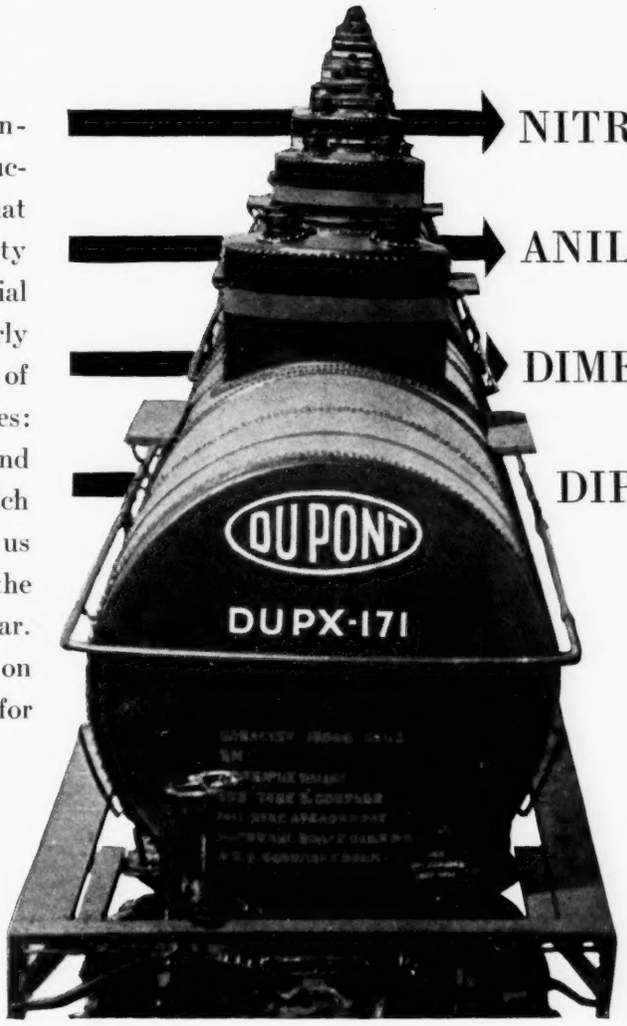

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Organic Chemicals

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

face of continued slow demand from producers of acetic acid. Stocks as of March 1, according to the Department of Commerce, amounted to 20,719,119 pounds in the United States, and together with Canada's supplies totaled 23,750,797 pounds. There was no improvement in volume of April shipments so it is quite likely that present stocks are even heavier. However, producers point to the fact that consumers are carrying no stocks to speak of and that any revival of activity will be felt immediately in this market. Furthermore, this is the period when the wood distillers begin to shut down plants so that production will drop sharply until the Fall. Prices continue firm, however, despite slack demand.

Calcium Chloride — Sales of this material continue to exceed the most optimistic expectations and for April were over 25 per cent greater than for the corresponding month of last year. The movement has by no means reached its peak, which should be about June, and all indications point to a new high record for this year's sales.

Carbon Black — This market continues weak due to the very great expansion of the carbon black industry in the first half of 1929 and the falling off of the rubber business in the last half. This shortened rubber production has continued over into the present year, due chiefly to lack of demand for tires from the automobile industry. As a result, a serious condition of over-production exists and stocks of carbon black have reached the highest point in history and are still increasing at a rapid rate. That the production increased rapidly during 1929 is indicated by the fact that the output was 47 per cent above that of 1928, amounting to 366,442,000 pounds, an increase over 1928 of 117,652,000 pounds. Total sales of carbon black in domestic and foreign buyers in 1929 amounted to 283,806,000 pounds, as compared with 280,579,000 pounds in 1928. Exports were materially higher than in 1928, amounting to 91,829,000 pounds as compared with 77,903,000 pounds in 1928, but sales for domestic consumption dropped off from 202,676,000 pounds in 1928 to 191,977,000 pounds in 1929, a decline of 5 per cent. The trend in stocks at the plants was reversed in 1929; a material decrease in stocks during 1928 was followed in 1929 by increases which totaled about three times the 1928 withdrawals. The quantity stored on December 31, 1929, amounted to 132,203,000 pounds, or 170 days' supply, as compared with 50,240,000 pounds, or 65 days' supply, on hand on Janurary 1.

Carnauba Wax — Has been fairly

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
				Cellosolve (see Ethylene glycol mono ethyl ether)			
				Acetate (see Ethylene glycol mono ethyl ether acetate)			
.30	.20	.30	.26	Celluloid, Scraps, Ivory cs...lb.	.....	.20	.20	.20
.20	.18	.20	.18	Shell, cases...lb.	.18	.20	.20	.18
.32	.15	.32	.30	Transparent, cases...lb.	.....	.15	.15	.15
1.25	1.20	1.40	1.40	Cellulose, Acetate, 50 lb kegs .lb.	1.10	1.25	1.25	1.10
.03¾	.03	.03¾	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03¾	.03¾	.03
.03½	.02	.04½	.04½	Precip, heavy, 560 lb cks...lb.	.02	.03½	.03½	.02
.03½	.02½	.03½	.02½	Light, 250 lb casks...lb.	.02½	.03½	.03½	.02½
.19	.18	.19	.18	Charcoal, Hardwood, lump, bulk wks...bu.	.18	.19	.19	.18
.06½	.06	.06½	.06	Willow, powd, 100 lb bbl wks...lb.	.06	.06½	.06½	.06
.05	.04	.05	.04	Wood, powd, 100 lb bbls...lb.	.04	.05	.05	.04
.02	.03½	.03	.02	Chestnut, clarified bbls wks,..lb.	.02½	.03	.03	.02½
.02½	.01½	02	.01½	25% tks wks...lb.	.01¾	.02½	.02½	.01¾
.04 ⅛	.04¼	.04 ⅛	.04 ⅛	Powd, 60%, 100 lb bgs wks.lb.	.....	.04¼	.04¼	.04¼
.06	.05½	.06	.05½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
9.00	8.00	9.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.02	.01¾	.02	.01¾	Powdered, bbls...lb.	.01¾	.02	.02	.01¾
12.00	10.00	12.00	10.00	Pulverized, bbls wks...ton	10.00	12.00	12.00	10.00
25.00	15.00	25.00	15.00	Imported, lump, bulk...ton	15.00	25.00	25.00	15.00
.03½	.01¾	.03½	.03	Powdered, bbls...lb.	.01¾	.03	.03	.01¾
				Chlorine			
.08½	.07	.09	.08	Chlorine, cyls 1c-1 wks contract ...lb.	.07½	.08½	.08½	.07½
.04½	.04½	.....	.....	cyls, cl wks,. contract ...lb.	.....	.04½	.04½	.04½
.03	.025	.03½	.03½	Liq tank or multi-car lot cyls wks contract...lb.	.025	.025	.025	.025
.10½	.08½	.07	.07	Chlorobenzene, Mono, 100 lb. drs 1c-1 wks...lb.	.10	.10½	.10½	.10
.20	.16	.22	.20	Chloroform, tech, 1000 lb drs..lb.	.15	.16	.16	.15
1.35	1.00	1.35	1.00	Chloropicrin, comml cyls...lb.	1.00	1.35	1.35	1.00
.29	.26	.29	.26	Chrome, Green, CP...lb.	.26	.29	.29	.26
.11	.06½	.11	.06½	Commercial...lb.	.06½	.11	.11	.06½
.18	.15	.17	.15½	Yellow...lb.	.17	.18	.18	.17
.05½	.04½	.05½	.04½	Chromium, Acetate, 8% Chrome bbls...lb.	.04½	.05½	.05½	.04½
.05½	.05½	.05½	.05½	20° soln, 400 lb bbls...lb.	.....	.05½	.05½	.05½
.28	.27	.28	.27	Fluoride, powd, 400 lb bbl..lb.	.27	.28	.28	.27
.35½	.34½	.35½	.34½	Oxide, green, bbls...lb.	.34½	.35½	.35½	.34½
10.50	10.00	9.50	9.00	Coal tar, bbls...bbl	10.00	10.50	10.50	10.00
2.22	2.10	2.22	2.10	Cobalt Oxide, black, bags...lb.	2.10	2.22	2.22	2.10
1.01	.95	.87	.84	Cochineal, gray or black bag..lb.	.95	1.01	1.01	.95
.95	.95	.86	.86	Teneriffe silver, bags...lb.	.....	.95	.95	.95
				Copper			
24.00	17.00	17.00	12.90	Copper, metal, electrol...100 lb.	.....	13.78	17.78	17.78
.25	.13	.17½	.16	Carbonate, 400 lb bbls...lb.	.10	.18½	.21½	.10
.28	.25	.28	.28	Chloride, 250 lb bbls...lb.	.25	.28	.28	.25
.60	.44	.50	.48	Cyanide, 100 lb drs...lb.	.44	.45	.45	.44
.32	.16½	.17	.16½	Oxide, red, 100 lb bbls...lb.	.24	.32	.32	.24
.19	.18	.19	.18	Sub-acetate verdigris, 400 lb bbls...lb.	.18	.19	.19	.18
7.00	5.50	5.50	5.05	Sulfate, bbls c-1 wks...100 lb.	.....	5.00	5.50	5.00
14.00	13.00	14.00	13.00	Copperas, crys and sugar bulk c-1 wks...ton	13.00	14.00	14.00	13.00
.42	.40	.42	.40	Cotton, Soluble, wet, 100 lb bbls...lb.	.40	.42	.42	.40
.....	.....	.....	.....	Cottonseed, S. E. bulk c-1...ton	.....	.....	.....	.....
.....	.....	.....	.....	Meal S. E. bulk...ton	.....	.....	.....	.....
38.00	37.50	38.00	36.00	7% Amm., bags mills...ton	37.50	38.00	38.00	37.50
.28	26½	.27½	.26	Cream Tartar, USP, 300 lb. bbls...lb.	26½	.27	.27	.26½
.42	.40½	.42	.40	Creosote, USP, 42 lb cbys...lb.	.40	.42	.42	.40
.19	.15	.19	.17	Oil, Grade 1 tanks...gal.	.15	.16	.16	.15
.23	.13	.23	.21	Grade 2...gal.	.13	.14	.14	.13
.28	.13	.28	.25	Grade 3...gal.	.13	.14	.14	.13
.17	.14	.20	.17½	Cresol, USP, drums...lb.	.14	.17	.17	.14
.36	.32			Crotonaldehyde, 50 gal dr...lb.	.32	.36	.36	.32
.17	.16	.17	.16	Cudbear, English...lb.	.16	.17	.17	.16
.16	.12½	.18½	.18½	Cutch, Rangoon, 100 lb bales..lb.	.12½	.13	.13	.12½
.08½	.08	.07	.06	Borneo, Solid, 100 lb bale..lb.	.08	08½	.08½	.08
2.00	2.00	1.75	1.67½	Cyanamide, bulk c-1 wks Nitrogen unit	.....	2.00	2.00	2.00
4.92	4.62	5.12	3.77	Dextrin, corn, 140 lb bags..100 lb.	4.52	4.72	4.82	4.52
4.87	4.57	5.07	3.72	White, 140 lb bags...100 lb.	4.47	4.67	4.77	4.47
.09	.08	.09	.08	Potato, Yellow, 220 lb bgs..lb.	.08	.09	.09	.08
.09	.08	.09	.08	White, 220 lb bags 1c-1...lb.	.08	.09	.09	.08
.08½	.08	.08½	.08	Tapioca, 200 lb bags 1c-1...lb.	.08	.08½	.08½	.08
3.80	3.80	3.80	3.80	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
3.10	2.70	2.90	2.85	Dianisidine, barrels...lb.	.....	2.70	2.70	2.70
.26½	.26½	.28	.26½	Dibutylphthalate, wks...lb.	.25½	.28	.28	.25½
.31½	.29½	.31½	.29½	Dibutyltartrate, 50 gal drs...lb.	.29½	.31½	.31½	.29½
.13	.05	.....	...	Dichloroethylether, 50 gal drs lb.	.05	.07	.07	.05
.65	.55	.65	.55	Dichloromethane, drs wks...lb.	.55	.65	.65	.55
3.00	2.75	.25	.23	Diethylamine, 400 lb drs...lb.	2.75	3.00	3.00	2.75
1.90	1.85	2.15	2.15	Diethylcarbonate, drs ...gal.	1.85	1.90	1.90	1.85
.60	.55	2.00	1.85	Diethylaniline, 850 lb drs...lb.	.55	.60	.60	.55
.13	.10	.60	.55	Diethyleneglycol, drs...lb.	.11	.13	.13	.10
.15	.13	.15	.10	Mono ethyl ether, drs...lb.	.13	.15	.15	.13
.30	.25	.35	.25	Mono butyl ether, drs...lb.	.28	.30	.30	.28
.15	.13			Mono methyl ether, 50 gal. dr...lb.	.15	.18	.18	.15
.22	.15	.....	.....	Diethylene oxide, 50 gal dr...lb.	.....	.50	.50	.50
.50	.50	.....	.....	Diethylorthotoluidin, drs...lb.	.64	.67	.67	.64
.67	.64	.67	.64	Diethyl phthalate, 1000 lb drums...lb.	.24	.26	.26	.24
.26	.24	.26	.24	Diethylsulfate, technical, 50 gal drums...lb.	.30	.35	.35	.30
.35	.30	.35	.30	Dimethylamine, 400 lb drs...lb.	.....	2.62	2.62	2.62
2.62	2.62	2.62	2.62	Dimethylaniline, 340 lb drs...lb.	.26	.28	.28	.26
.32	.26	.32	.30					

ETHYL ACETATE, Standard

Acidity
Not over 0.015 as free acetic

Boiling Range
100% between 70° and 85° C; at least 90% below 80° C.

Color
White

Dryness
Practically anhydrous, standing at least ten volumes of gasoline without turbidity

Ester
Not less than 85%

Specific gravity at 15½° C.
0.888-0.890

Residue and residual odor
Minimum, due to process of manufacture

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

steady during the past month although with some pronounced demand for the higher grades, leading to slightly advanced prices. Flora is now at 34c lb., and No. 1, yellow at 31c lb. Other grades are unchanged. Brazilian shipments of carnauba wax during 1929 were normal, amounting to 6,433 metric tons, valued at $2,921,191. Exports during 1928 totaled 6,981 tons, valued at $3,420,423. Exports continue to be made chiefly to the United States, Germany and Great Britain. Carnauba wax is produced principally in the States of Ceara and Piauhy, and the heaviest exports are made from the ports of Fortaleza and Ilha do Cajueiro. Prices are reported to have been remunerative during the year, although slightly below those of 1928. No outstanding events occurred during 1929, according to Vice Consul R. E. Cohn, Rio de Janeiro. Imports of carnauba wax into the United States during 1928 and 1929 were 5,471,000 pounds, valued at $1,511,000, and 6,849,000 pounds, valued at $1,537,000, respectively. Imports of other vegetable wax for this period amounted to 4,012,000 pounds, valued at $720,000 and 4,618,000 pounds, valued at $724,000.

Casein — Events are just marking time in the casein market awaiting the final disposition of the tariff. Prices are nominally at 14c @ 15c lb., but if the duty goes on as indicated, they will advance immediately to about 16½c lb.

Chlorine — Continues below normal for this season of the year due to the fact that demands from the paper pnd pulp industry continue off. The cheapness of bleached pulp is an added factor making for unsatisfactory conditions in this market.

Copper Sulfate — Of chief interest during the past month was the 4c per pound decline in the metal price which was followed by ½c lb. decline in the price of copper sulfate. This decline in copper was one of the most abrupt of recent years but it was not unexpected since for some weeks smaller producers had been shading prices below schedule. Copper had been over-produced for some time and stocks were accumulating so rapidly that the situation was getting out of hand. At the end of March the figures showed surplus stocks of 256,020 tons, or the largest total recorded in about eight years. This made it increasingly difficult to maintain the so-called stabilized price of copper in the face of dwindling or withheld demand. The 4c drop in copper prices was followed shortly afterwards by the announcement of a ½c lb. decline in the price of blue vitriol. This decline stimulated business to a great extent and there followed a period

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
.50	.45	.50	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
.16½	.15	.16½	.15½	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.15	.1:	.16	.15	Dintrochlorobenzene, 400 lb bbls.....lb.	.13	.15	.15	.13
.37	.34	.34	.32	Dinitronaphthalene, 350 lb bbls .....lb.	.34	.37	.37	.34
.32	.31	.32	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
.19	.17	.19	.18	Dinitrotoluene, 300 lb bbls...lb.	.16	.18	.18	.16
.49	.42	90	.48	Diorthotolyguanidine, 275 lb bbls wks.....lb.	.42	.46	.46	.42
.....	.....	.....	.....	Dioxan (See Diethylene Oxide)	.....	.....	...	...
.50	.40			Diphenyl.....lb.	.30	.40	.50	.30
.47	.40	.47	.45	Diphenylamine.....lb.	.....	.40	.40	.40
.40	.30	.72	.40	Diphenylguanidine, 100 lb bbl lb.	.30	.35	.35	.30
.30	.26	.30	.26	Dip Oil, 25%, drums.....lb.	.26	.30	.30	.26
57.00	46.50	62.00	58.00	Divi Divi pods, bgs shipmt..ton	.....	42.00	46.50	42.00
.05½	.05	.05½	.05	Extract.....lb.	.05	.05½	.05½	.05
.84	.77	.82	.73	Egg Yolk, 200 lb cases.....lb.	.72	.75	.80	.72
1.90	1.70	1.75	1.7	Epsom Salt, tech, 300 lb bbls o-1 NY.....100 lb.	1.70	1.90	1.90	1.70
.39	.38	.38	37	Ether, USP, 600 lb. drs.....lb.	.....	.14	.14	.14
				Anhydrous, C.P. 300 lb. drs.lb.	.....	.40	.40	.40
.122	.108	1.05	.75	Ethyl Acetate, 85% Ester, ... tanks.....lb.	.....	.115	.115	.115
.129	.111	1.25	1.10	drums.....lb.	.121	.127	.158	.121
				Anhydrous, tanks.....lb.	.....	.142	.142	.142
				drums.....lb.	.149	.156	.156	.149
.68	.65	.....	.....	Acetoacetate, 50 gal drs....lb.	.65	.68	.68	.65
1.11	1.05	1.11	1.05	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.55	.50	.70	.70	Bromide, tech, drums .....lb.	.50	.55	.55	.50
1.90	1.85	.....	.....	Carbonate, 90%, 50 gal drs gal.	1.85	1.90	1.90	1.85
.22	.22	.22	.22	Chloride, 200 lb. drums....lb.	.....	.22	.22	.22
.40	.35	.....	.....	Chlorocarbonate, cbys.....lb.	.....	.30	.40	.30
.52	.50	.....	.....	Ether, Absolute, 50 gal drs..lb.	.50	.52	.52	.50
5.00	5.00			Furoate, 1 lb tins .....lb.	.....	5.00	5.00	5.00
.35	.25	3.50	3.50	Lactate, drums works.....lb.	.25	.29	.29	.25
.30	.30	.30	.30	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.55	.45	.55	.45	Oxalate, drums works.....lb.	.45	.55	.55	.45
.36	.30	.36	.30	Oxybutyrate, 50 gal drs wks.lb.	.....	.30½	.30½	.30½
.70	.79	.70	.70	Ethylene Dibromide, 60 lb dr .lb.	.....	.70	.70	.70
.85	.75	.85	.75	Chlorhydrin, 40%, 50 gal drs chloro. cont.....lb.	.75	.85	.85	.75
.10	.05	.11	.07	Dichloride, 50 gal drums...lb.	.05	.07	.07	.05
30	.25	.40	.25	Glycol, 50 gal drs wks.....lb.	.25	.28	.28	.25
.31	.23	.27	.31	Mono Butyl Ether drs wks.	.23	.27	.27	.23
.24	.16	.20	.24	Mono Ethyl Ether drs wks	.16	.20	.20	.16
.26	.19	.23	26	Mono Ethyl Ether Acetate dr. wks.....	.19	.23	.23	.19
.23	.19			Mono Methyl Ether, drs.lb.	.19	.23	.23	.19
				Oxide, cyl.....lb.	.....	2.00	2.00	2.00
.65	.45	.65	.62	Ethylidenaniline.....lb.	.45	.47½	.47½	.45
25.00	20.00	25.00	20.00	Feldspar, bulk.....ton	25.00	20.00	25.00	20.00
21.00	15.00	21.00	15.00	Powdered, bulk works.....ton	15.00	21.00	21.00	15.00
.09	.05	.09	.07½	Ferric Chloride, tech, crystal 475 lb bbls.....lb.	.05	.07½	.07½	.05
4.25&10	3.65&10	5.50&10	4.90&10	Fish Scrap, dried, wks.....unit	.....	4.35&10	4.35&10	.....
4.00&50	3.50&50	4.75&50	4.00&50	Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis...unit	.....	3.50&50	3.50&50	.....
46.00	41.00	25.00	25.00	Fluorspar, 98%, bags.....	41.00	46.00	46.00	41.00

Formaldehyde

.....	.....	.....	.....	Formaldehyde, aniline, 100 lb. drums.....lb.	.....	.....	.....	.....
.42	.37½	.42	.39	USP, 400 lb bbls wks.....lb.	.37½	.42	.42	.37½
.10	.08½	.09	.08½	Fossil Flour.....lb.	.07½	.07¾	.08	.07½
.04	.02½	.04	.02½	Fullers Earth, bulk, mines ..ton	.02½	.04	.04	.02½
20.00	15.00½	20.00	15.00	Imp. powd o-1 bags.....ton	15.00	20.00	20.00	15.00
30.00	25.00	30.00	25.00	Furfural (tech.) drums, wks..lb.	25.00	30.00	30.00	25.00
.19½	.17	.19¼	.1 ½	Furfuramide (tech) 100 lb dr..lb.	.....	.10	.15	.10
.30	.30	.....	.....	Furfuryl Acetate, 1 lb tins....lb.	.....	.30	.30	.30
5.00	5.00	.....	.....	Alcohol, (tech) 100 lb dr....lb.	.....	5.00	5.00	5.00
.50	.50	.....	.....	Furoic Acid (tech) 100 lb dr...lb.	.....	.50	.50	.50
1.00	.50	.....	.....	Fusel Oil, 10% impurities ...gal.	.....	.50	.50	.50
1.35	1.35	1.35	1.3	Fustic, chips.....lb.	.. ..	1.35	1.35	1.35
.05	.04	.05	.0	Crystals, 100 lb boxes.....lb.	.04	.05	.05	.04
.22	.20	.22	.20	Liquid, 50°, 600 lb bbls....lb.	.20	.22	.22	.20
.10	.09	.10	.09	Solid, 50 lb boxes.....lb.	.09	10	.10	.09
.16	.14	.23	.20	Sticks.....ton	.14	.16	.16	.14
26.00	25.00	32.00	30.00	G Salt paste, 360 lb bbls.....lb.	25.00	26.00	26.00	25.00
.52	.45	.52	.50	Gall Extract.....lb.	.45	.50	.50	.45
.21	.18	21	.20	Gambier, common 200 lb cs...lb.	.18	.20	.20	.18
.07	06	.09	.08	25% liquid, 450 lb bbls....lb.	.06	.07	.07	.06
.14	.08	.14	.12	Singapore cubes, 150 lb bg..lb.	.08	.10	.10	.08
.09	.08½	.12	.11	Gelatin, tech, 100 lb cases....lb.	.08½	.09	.09	.08½
.50	.45	.50	.45	Glauber s Salt, tech, o-1 wks.....100 lb.	.45	.50	.50	.45
1.70	.70	1 00	.70	Glucose (grape sugar) dry 70-80° bags o-1 NY.....100 lb.	1.00	1.70	1.70	1.00
3.34	3.20	3.34	3.24	Tanner's Special, 100 lb bags .....100 lb.	3.24	3.34	3.34	3.24
3.14	3.14	3.14	3.14	Glue, medium white, bbls ...lb.	.....	3.14	3.14	3.14
.24	.20	.24	.20	Pure white, bbls... .....lb.	.20	.24	.24	.20
.26	.22	.26	.22	Glycerin, CP, 550 lb drs.....lb.	.22	.26	.26	.22
.16	.13½	.19	.15	Dynamite, 100 lb drs..... lb.	.14	.14½	.14½	.14
.12½	.10½	.15	11½	Saponification, tanks..... lb.	.12	.12¼	.12¼	.12
.08¾	.07½	.10½	.08½	Soap Lye, tanks.....lb.	.07½	.08	.08	.07½
.07½	.06¾	.09½	.07½	Graphite, crude, 220 lb bgs...ton	07	.07½	.07½	.07
35.00	15.00	35.00	15.00	Flake, 500 lb bbls.....lb.	15.00	35.00	35.00	15.00
.09	.06	.09	.06		.06	09	.09	.06

Gums

.04½	.03	.04½	.03¾	Gum Accroides, Red, coarse and fine 140-150 lb bags.....lb.	.03¾	.04½	.04½	.03¾
.06½	.06¾	.06½	.06	Powd, 150 lb bags.....lb.	.06	.06½	.06½	.06

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Rezyl Balsams
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Sodium Phosphates (Di and Tri)
Sulphocyanides (Thyocyanates)
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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

of the heaviest sales and shipments ever experienced by producers of the sulfate. As a result, the level for April is as good as that of last year, in contrast with the previous months of this year which lagged far behind. The demand has by no means reached a peak and it is expected that May and June will also be very good. Although the metal continues in weak position, and prices show a tendency towards further decline, the sulfate, on the contrary is very strong and shows an upward tendency. That the two prices do not of necessity follow each other is shown by the fact that the metal decline of 4c lb. was followed by only a ½c lb. decline in the sulfate price. This, in turn, is explained by the fact that the sulfate price declined ½c lb. in last October, while the metal price has remained steady for a year.

Dextrin — Prices continue unchanged on this material, which is reported in fairly good demand. Annual shipments abroad of American dextrine are worth approximately $1,000,000. Since 1922 the United Kingdom, Canada and Japan, respectively, have maintained their same relative positions as the three best foreign markets. The ensuing table shows the ten best foreign markets for American dextrine in 1929:

	1929	
	Pounds	*Value*
United Kingdom	10,911,557	$485,156
Canada	5,286,556	261,711
Japan	1,451,140	71,482
Australia	625,504	30,245
China	568,203	26,242
Cuba	384,929	28,560
British India	341,760	15,787
New Zealand	161,720	7,901
Argentina	154,312	9,874
Mexico	151,724	8,911
Other countries	790,821	37,135
Total	20,828,316	$983,004

Egg Yolk — Prices have declined to what is generally considered a more normal level since the tariff bill in conference was changed to place this material on the previous basis as regards duty. Demand has fallen off as the reaction has set in from the rather heavy buying which had been taking place in anticipation of the increased tariff. Quotations are now at 72c @ 75c lb.

Ethyl Acetate — Continues in poor demand and far below the level of last year. Some favorable indications are seen in the considerable activity displayed in the production of low-priced cars, but automobile production as a whole is far below the level of last year and until this condition is remedied, there can of course, be no great improvement in the position of this market. Prices, however, remain firm at quoted levels.

Formaldehyde — It is reported that demand for this material has been off

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
.20	.18	.20	.18	Yellow, 150-200 lb bags....lb.	18	.20	.20	.18
				Animi (Zanzibar) bean & pea				
.40	.35	.40	35	250 lb cases.....lb.	.35	.40	.40	.35
.55	.50	.55	.50	Glassy, 250 lb cases.....lb.	.50	.55	.55	.50
				Asphaltum, Barbadoes (Manjak)				
.12	.09	.12	.09	200 lb bags.....lb.	.09	.12	.12	.09
.17	.15	.17	.15	Egyptian, 200 lb cases.....lb.	.15	.17	.17	.15
				Gilsonite Selects, 200 lb bags				
65.00	58.00	65.00	55.00	.....ton	58.00	65.00	65.00	58.00
				Damar Batavia standard 136, lb				
.26	.22	.26	.22½	cases.....lb.	.16	.16½	.20	.16
.11	.10½	.11	.10½	Batavia Dust, 160 lb bags.....lb.	.08	.09	.11	.08
.17½	.15	.17½	.16	E Seeds, 136 lb cases.....lb.	.11	.11½	.13	.11
				F Splinters, 136 lb cases and				
.13½	.13	.14½	.13	bags.....lb.	.10	.10½	.13½	.10
.30½	.26	.30½	.29½	Singapore, No 1, 224 lb cases lb.	.20	.21	.24	.20
24	.21½	.24	.20	No. 2, 224 lb cases.....lb.	.18	.19	.20½	.18
.14	.10	.15	.13½	No. 3, 180 lb bags.....lb.	.09	.10	.11½	.09
				Benzoin Sumatra, U. S. P. 120 lb				
.40	.38	.48	.33	cases.....lb.	.38	.40	.40	.38
				Copal Congo, 112 lb bags, clean				
.17	.14	.15	.14	opaque.....lb.	.16	.17	.17	.16
.09	.08½	.09	.08½	Dark, amber.....lb.	.07½	.08	.08	.07½
.14	.12½	.14	.12½	Light, amber.....lb.	.12½	.14	.14	.12½
.36	.35	.36	.35	Water white.....lb.	.37	.45	.45	.37
.65	.58	.65	.58	Mastic.....lb.	.59	.60	.65	.59
				Manila, 180-190 lb baskets				
.17½	.17	.17½	.16	Loba A.....lb.	.17	.17½	.17½	.17
.16½	.15½	.16½	.15	Loba B.....lb.	.15½	.16	.16½	.15½
.14½	.13½	.14	.13	Loba C.....lb.	.12½	.13	.14	.12½
.19	.17	.19	.16	Pale bold, 224 lb cs.....lb.	.17	.19	.19	.17
.13½	.13	.13½	.12	Pale nubs.....lb.	.13	.13½	.13½	.13
.11	.10	.11	.07½	East Indies chips, 180 lb bags lb.	.10	.11	.11	.10
.21	.20	.21	.17	Pale bold, 180 lb bags....lb.	.18½	.19	.21	.18½
.16	15	.16	.14	Pale nubs.....lb.	.13½	.14	.16	.13½
		.....	.....	Pontianak, 224 lb cases....				
.23	.20	.25½	.22	Pale bold gen No 1.....lb.	.20	.21	.21	.20
.15	.14½	.15	.13	Pale gen chips spot.....lb.	.14½	15	.15	.14½
.14	.13½	.14	.13	Elemi, No. 1, 80-85 lb cs...lb.	.13½	.14	.14	.13½
.13½	.13	.13½	.13	No. 2, 80-85 lb cases.....lb.	.13	.13½	.13½	.13
.13	.12	.13	.12	No. 3, 80-85 lb cases.....lb.	.12	.13	.13	.12
				Kauri, 224-226 lb cases No. 1				
.57	.50	.57	.50	.....lb.	.50	.57	.57	.50
.38	.35	.38	.35	No. 2 fair pale.....lb.	.35	38	.38	.35
				Brown Chips, 224-226 lb				
.12	.10	.12	.10	cases.....lb.	.10	.12	.12	.10
		.....	.....	Bush Chips, 224-226 lb.				
.40	.38	.40	.38	cases.....lb.	.38	.40	.40	.38
		.....	.....	Pale Chips, 224-226 lb cases				
.26	.24½	.26	.24½	.....lb.	.24½	.26	.26	.24½
.72	.35	.60	.26	Sandarac, prime quality, 200				
.20	.17	.....	.....	lb bags & 300 lb casks...lb	.33	.35	.40	.33
.20	.14	.20	.17	Helium, 1 lit. bot. .....lit.	.....	25.00	25.00	25.00
.11	.11	.11	.11	Hematine crystals, 400 lb bbls lb.	.14	.18	.18	.14
.03½	.03	.03½	.03½	Paste, 500 bbls.....lb.	.....	.11	.11	.11
17.00	16.00	16.00	16.00	Hemlock 25%, 600 lb bbls wks lb.	.03	.03½	.03½	.03
.60	.60	.60	.60	Bark.....ton	.....	16.00	16.00	16.00
.58	.48	.56	.62	Hexalene, 50 gal drs wks.....lb.	.....	.60	.60	.60
4.00	3.75	4.00	4.00	Hexamethylenetetramine, drs .lb.	.48	.50	.50	.48
3.90	3.75	.....	.....	Hoof Meal, fob Chicago....unit	.....	3.75	3.75	3.75
				South Amer. to arrive....unit	.....	3.75	3.75	3.75
.26	.24	.26	.24	Hydrogen Peroxide, 100 vol, 140				
				lb cbys.....lb.	.24	.26	.26	.24
.15	.12	.15	.12	Hydroxyamine Hydrochloride lb.	.....	3.15	3.15	3.15
1.30	1.28	1.30	1.28	Hypernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
.18	.15	.18	.15	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
.12	.12			20% paste, drums.....lb.	.15	.18	.18	.15
				Synthetic, liquid.....lb.	.....	.12	.12	.12
				Iron Chloride, see Ferric or				
				Ferrous				
.10	.09	.10	.09	Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
3.25	2.50	3.25	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.12	.10	.12	.10	Oxide, English.....lb.	.10	.12	.12	.10
.03½	.02½	.03½	.02½	Red, Spanish.....lb.	.02½	.03½	.03½	.02½
.90	.85	.90	.85	Isopropyl Acetate, 50 gal drs gal.	.85	.90	.90	.85
.18	.16	.20	.17	Japan Wax, 224 lb cases.....lb.	.14½	.15	.15½	.14½
70.00	60.00	70.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
13.50	13.00	.....	.....	Lead Acetate, bbls wks...100 lb.	13.00	13.50	13.50	13.00
				White crystals, 500 lb bbls				
14.50	14.00	13.50	13.00	wks.....100 lb.	14.00	14.50	14.50	14.00
.15	.13	.15	.13	Arsenate, drs 1c-1 wks.....lb.	.13	.16	.16	.13
				Dithiofuroate, 100 lb dr....lb.	.....	1.00	1.00	1.00
7.75	6.10	6.25	6.25	Metal, c-1 NY.....100 lb.	.....	7.75	7.75	6.10
.14	.14	.14	.14	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.18	.17½	.18	.17½	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.08¾	.08½	.08¾	.08½	Oxide Litharge, 500 lb bbls.lb.	.....	.08½	.08½	.08½
.09¾	.09½	.09¾	.09½	Red, 500 lb bbls wks....lb.	.....	.09½	.09½	.09½
.09¼	.09	.09	.09	White, 500 lb bbls wks...lb.	.....	.09½	.09½	.09½
.08¾	.08½	.08½	.08½	Sulfate, 500 lb bbls wk...lb.	.....	.08¾	.08¾	.08¾
57.00	52.00							
57.30	52.30			Leuna saltpetre, bags c.i.f...ton	.....	57.60	57.60	57.60
4.50	4.50	4.50	4.50	S. points c. i. f.....ton	.....	57.90	57.90	57.90
1.05	1.05	1.05	1.05	Lime, ground stone bags.....ton	.....	4.50	4.50	4.50
				Live, 325 lb bbls wks...100 lb.	.....	1.05	1.05	1.05
.17	.15	.17	.15	Lime Salts, see Calcium Salts				
				Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
.06½	.05½	.06½	.06½	Lithopone, 400 lb bbls 1c-1 wks				
.08½	.08¼	.08¼	.08¼	.....lb.	.....	.05½	.05½	.05½
.03½	.03	.03½	.03	Logwood, 51°, 600 lb bbls.....lb.	.08¼	.08½	.08¼	.08½
.12½	.12½	.12½	.12½	Chips, 150 lb bags.....lb.	.03	.03½	.03½	.03
26.00	24.00	27.00	26.00	Solid, 50 lb boxes.....lb.	.....	.12½	.12½	.12½
.08	.07½	.08	.07½	Sticks.....ton	24.00	26.00	26.00	24.00
				Lower grades.....lb.	.07½	.08	.08	.07½
.25	.22	.30	.30	Madder, Dutch.....lb.	.22	.25	.25	.22
60.00	50.00	50.00	48.00	Magnesite, calc, 500 lb bbl...ton	50.00	60.00	60.00	50.00

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

and the market is easy, although quoted prices are being maintained.

Glycerine — The market for this material continues to be without feature or activity. During the past year conditions have been very diappointing, according to a report on this market in "The Chemical Trade Journal", London. The drop in price during 1927 and 1928 continued and the average value for last year was again well below the average for 1928. The market has been very dull with the exception of a slight recovery last Fall, due to demand in anticipation of winter requirements. The situation in Europe has shown no material change and the market on the whole has been dull and uninteresting. There is as yet no sign of an early revival. Stocks in America were approximately 3,000 tons less on December 31, 1929, than on December 31, 1928, although 9,016 tons of glycerine were imported during the year. Stocks during 1928 decreased by only 2,500 tons, although the imports during the year were only 3,845 tons. This would indicate an improvement in the consumption in the United States to the extent of approximately 5,500 tons, as compared with the year 1928. On the other hand, it is clear that if demand in the United States was keeping pace with the production, the market could not have remained at such a low level for so long a period. As is to be expected, production of glycerine in Europe, especially amongst the smaller soapmakers, has decreased, but taking into consideration that Europe, during 1929, was still able to export about 8,000 tons of glycerine to the United States without raising the prices in Europe, it is obvious that, notwithstanding decreased production, fair quantities of glycerine can still be spared.

Gums — Prices on accroides, yellow, have become nominal since it is reported that there are no more stocks in this country. In comparison with the red grade, prices on the yellow, had been too high and it is thought that no more will be imported. The past month has witnessed rather drastic price reductions in the gum market, with Damar, Singapore and Mastic, leading the way. Demand has been at a standstill and this has had its effect in the primary market where orders are far below any previously existing level. Figures issued by the United States Department of Commerce clearly bear out the contention of varnish gum dealers that the reason for the reduction of the stocks of kauri was the surplus of exports over the arrivals of new supplies on the primary market in Auckland, New Zealand. Both 1928 and 1929 showed this superiority of demand over incoming

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
				Magnesium			
.06½	.06	06½	.06	Magnesium Carb, tech, 70 lb bags NY....lb.	06	.06½	.06½ .06
36.00	36.00	37.00	27.00	Chloride flake, 375 lb. drs c-l wks....ton	.....	36.00	36.00 36.00
33.00	33.00	33.00	33.00	Imported shipment....ton	.....	33.00	33.00 33.00
31.00	31.00	31.00	31.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00 31.00
.10½	.10	.10½	.10	Fluosilicate, crys, 400 lb bbls wks....lb.	.10	.10½	.10½ .10
.42	.42	.42	.42	Oxide, USP, light, 100 lb bbls ....lb.	.....	.42	.42 .42
.50	.50	.50	.50	Heavy, 250 lb bbls....lb.	.....	.50	.50 .50
1.25	1.00	.....	.....	Peroxide, 100 lb cs....lb.	1.00	1.25	1.25 1.00
.10½	.09¾	.10¼	.09¾	Silicofluoride, bbls....lb.	.09¾	.10¼	.10¼ .09¾
.26	.25	.25	.23	Stearate, bbls....lb.	.25	.26	.26 .25
.24	.19	.24	.24	Manganese Borate, 30%, 200 lb bbls....lb.	.....	.19	.19 .19
.08½	.08	.08½	.08	Chloride, 600 lb casks....lb.	.08	.08½	.08½ .08
.06	.04½	.....	.....	Dioxide, tech (peroxide) drs lb.	.04½	.06	.06 .04½
		.50	.35	Ore, powdered or granular			
.03½	.02½	.03½	.03	75-80%, bbls....lb.	.02½	.03	.03 .02½
.04½	.03½	.04½	.04	80-85%, bbls....lb.	.....	.03½	.03½ .03½
.05½	.04	.05½	.05	85-88%, bbls....lb.	.04	.04½	.04½ .04
.08½	.07	.07¼	.07	Sulfate, 550 lb drs NY....lb.	.07	.08	.08 .07
Nom.	.03½	Nom.	.03½	Mangrove 55%, 400 lb bbls..lb.	.03½	Nom.	Nom. .03½
35.00	30.00	45.00	39 000	Bark, African....ton	.....	33.00	33.00 33.00
15.00	14.00	12.00	10.00	Marble Flour, bulk....ton	14.00	15.00	15.00 14.00
2.05	2.05			Mercurous chloride....lb.	.....	2.05	2.05 2.05
126.00	120.00	132.00	121.00	Mercury metal....75 lb flask	116.00	126.00	124.50 116.00
.74	.67	.74	.72	Meta-nitro-aniline....lb.	.67	.69	.69 .67
1.55	1.50	1.80	1.50	Meta-nitro-para-toluidine 200 lb. bbls....lb.	1.50	1.55	1.55 1.50
.90	.80	.94	90	Meta-phenylene-diamine 300 lb. bbls....lb.	.80	.84	.84 .80
.72	.67	.74	.72	Meta-toluene-diamine, 300 lb bbls....lb.	.67	.69	.69 .67
				Methanol			
.65	.51	.58	.46	Methanol, (Wood Alcohol), 95%....gal.	.38	.42	.48 .38
.65	.53	.60	.47	97%....gal.	.39	.43	.49 .39
.68	.53	.63	.44	Pure,....gal.	.40½	.44½	.50 .40½
.66	.54	.58	.48	Synthetic....gal.	.40½	.44½	.50 .40½
.62	.55	.75	.45	Denat. gre. tanks....gal.	.....	.43	.45 .43
.95	.95	.95	.95	Methyl Acetate, drums....gal.	.....	Nom.	Nom. Nom.
.85	.73	.90	.68	Acetone,....gal.	.65	.70	.77 .65
.95	.85	.95	.85	Anthraquinone,....lb.	.70	.75	.85 .70
.....	.....	.....	.....	Cellosolve, (See Ethylene Glycol Mono Methyl Ether)	.....	.....	....
.60	.45	60	.55	Chloride, 90 lb cyl....lb.	.45	.45	.45 .45
.50	50			Furoate, tech., 50 gal. dr., lb.	.....	.50	.50 .50
80.00	65.00	80.00	65.00	Mica, dry grd. bags wks....lb.	65.00	80.00	80.00 65.00
115.00	110.00	115.00	110.00	Wet, ground, bags wks....lb.	110.00	115.00	115.00 110.00
3.00	3.00	.....	.....	Michler's Ketone, kegs....lb.	.....	3.00	3.00 3.00
.75	.70	.75	.70	Monochlorobenzene, drums see, Chorobenzene, mono....lb.	.70	.75	.75 .70
4.20	3.75	4.20	3.95	Monomethylparaminosufate 100 lb drums....lb.	3.75	4.00	4.00 3.75
.07	.06½	.07	.06½	Montan Wax, crude, bags....lb.	.06½	.07	.07 .06½
.04½	.03¾	.04½	.04½	Myrobalans 25%, liq bbls....b	.03¾	.04½	.04½ .03¾
.08½	.05	.08½	.08	50% Solid, 50 lb boxes....lb.	.05	.05½	.05½ .05
43.00	40.00	50.00	42.00	J1 bags....ton	.....	41.00	41.00 41.00
40.00	26.50	40.00	32.50	J 2 bags....ton	.....	26.50	26.50 26.50
34.00	27.50	40.00	32.50	R 2 bags....ton	.....	27.50	27.50 27.50
.18	.16	.18	.18	Naphtha, v. m. & p. (deodorized) bbls....gal.	.....	.16	.16 .16
.05½	.05½	.06	.05½	Naphthalene balls, 250 lb bbls wks....lb.	.....	.05½	.05½ .05½
.04½	.04½	.04½	.04½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½ .04½
.05	.05	.05	.05	Flakes, 175 lb bbls wks....lb.	.....	.05	.05 .05
.24	.20	.24	.21	Nickel Chloride, bbls kegs....lb.	.20	.21	.21 .20
.40	.37	.38	.35	Oxide, 100 lb kegs NY....lb.	.37	.40	.40 .37
.13	.13	.09¾	.09	Salt bbl. 400 bbls lb NY...lb.	.....	.13	.13 .13
.13	.13	.09	.08¾	Single, 400 lb bbls NY....lb.	.....	.13	.13 .13
1.30	1.25	1.30	1.25	Nicotine, free 40%, 8 lb tins, cases....lb.	1.25	1.30	1.30 1.25
1.20	.98½	1.20	.98½	Sulfate, 10 lb tins....lb.	.98½	1.20	1.20 .98½
18.00	12.00	14.00	13.00	Nitre Cake, bulk....ton	14.00	16.00	18.00 14.00
.10½	.09	.10½	.10½	Nitrobenzene, redistilled, 1000 lb drs wks....lb.	.09	.09½	.09½ .09
.36	.25	Nom.	.40	Nitrocellulose, c-l-l-cl, wks...lb.	.25	.36	.36 .25
4.00	3.40	4.00	3.35	Nitrogenous Material, bulk..unit	.....	3.25	3.40 3.25
.25	.25	.25	.25	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25 .25
.15	.14	.15	.14	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15 .14
.16½	.16	Nom.	.25	Nutgalls Aleppy, bags....lb.	.16	.16½	.16½ .16
.13	.12	.18	.17	Chinese, bags....lb.	.12	.13	.13 .12
50.00	30.00	50.00	45.00	Oak Bark, ground....ton	30.00	35.00	35.00 30.00
23.00	20.00	23.00	20.00	Whole....ton	20.00	23.00	23.00 20.00
.13½	11¾	.13½	.13	Orange-Mineral, 1100 lb casks NY....lb.	.11¾	.13	.13 .11¾
2.25	2.15	2.25	2.20	Orthoaminophenol, 50 lb kgs..lb.	2.15	2.25	2.25 2.15
2.60	2.50	2.50	2.35	Orthoanisidine, 100 lb drs....lb.	2.50	2.60	2.60 2.50
.65	.50	.65	.50	Orthochlorophenol, drums....lb.	.50	.65	.65 .50
.28	.18	.28	.18	Orthocresol, drums....lb.	.25	.25	.35 .18
.10	.07	.07	.06	Orthodichlorobenzene, 1000 lb drums....lb.	.07	.10	.10 .07
.33	.30	.35	.32	Orthonitrochlorobenzene, 1200 lb drs wks....lb.	.30	.33	.33 .30
.18	.16	.18	.17	Orthonitrotoluene, 1000 lb drs wk....lb.	.16	.18	.18 .16
.90	.85	.90	.85	Orthonitrophenol, 350 lb dr...lb.	.85	.90	.90 .85
.30	.25	.31	.29	Orthotoluidine, 350 lb bbl lc-l lb.	.25	30	.30 .25

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

supply and explain why the price tone of this gum has gradually hardened and now appears very firm. During 1928 the arrivals of kauri gum at Auckland amounted to 4,003 tons and the exports during the same year to 4,394, or a difference of 391 tons. This difference was even sharper in 1929, when the arrivals aggregated 4,087 tons and the exports 4,937, a superiority of 850 tons for the latter. Thus, during these two years combined a grand total of 9,331 tons of this gum have been removed from Auckland stocks, as compared with a replenishment amounting to 8,090 tons, or a difference of 1,241 tons. Therefore exports exceeded arrivals by, roughly, 15 per cent. Arrivals of copal gum from the Belgian Congo during February were estimated at 739 tons, as compared with 928 tons in January and 1,312 tons in December, 1929. Declared exports from Belgium to the United States during February amounted to 443,278 pounds, valued at $30,696 against 496,458 pounds, worth $33,083 in January, bringing the total for the first two months of 1930 to 939,736 pounds, valued at $63,779.

Mercury — As offerings of domestic material from the West decline in volume, the market assumes a firmer tendency. The market is still unstable with almost a $10 per flask range between prices of the imported and domestic material.

Methanol — The market on practically all grades continue in very unstable condition. Demand has been far below normal and highly competitive conditions continue to feature the market, especially on denaturing grade which is again lower, quoted prices being 43c per gallon.

Methyl Acetone — The general unsettlement in the menthol market has communicated itself to this market as well. Prices are highly competitive and considerable shading is reported as being in evidence as demand continues below normal.

Myrobalans — Prices on this material have become nominal since internal troubles of India are interfering with the normal supply.

Nitrogenous Material — Demand has been almost completely absent during the past month and the market has been dull and inactive.

Phenol — In contrast with formaldehyde, the demand for this material is reported to be up to quite a satisfactory level and prices show a distinctly firmer tendency.

Shellac — Some recovery from the low position of this market when last reported has been evidenced during the past month. Demand has picked up a bit and the strengthened position of the market

1929 High	1929 Low	1028 High	1028 Low		Current Market	1930 High	1930 Low
.75	.70	.75	.70	Orthonitroparachlorphenol, tins ....lb.	.70	.75	.75	.70
.17	.16	.17	.16	Osage Orange, crystals.....lb.	.16	.17	.17	.16
.07½	.07	.07	.07	51 deg. liquid.....lb.	.07	.07½	.07½	.07
.15	.14½	.15	.14½	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
				Paraffin, refd, 200 lb cs slabs				
.06¾	.04½	.06¾	.06½	123-127 deg. M. P.....lb.	.04½	.04¾	.04¾	.04½
.07	.04½	.07½	.07½	128-132 deg. M. P.....lb.	.04½	.06¾	.06¾	.04½
.07½	.06½	.08½	.08	133-137 deg. M. P. .....lb	.06½	.07½	.07½	.06½
.28	.20½	.28	.20½	Para Aldehyde, 110-55 gal drs..lb.	.20½	.23	.23	.20½
1.05	1.00	1.05	1.00	Aminoacetanilid, 100 lb bg..lb.	1.00	1.05	1.05	1.00
				Aminohydrochloride, 100 lb kegs.....lb	1.25	1.30	1.30	1.25
1.30	1.25	1.30	1.25	Aminophenol, 100 lb keg...lb.	.92	1.25	1.02	.92
1.15	.99	1.15	1.15	Chlorophenol, drums.....lb	.50	.65	.65	.50
.65	.50	.65	.50	Coumarone, 330 lb drums. lb.	.....	.....	.....	.....
.....	.....	.....	.....	Cymene, refd, 110 gal dr. .gal.	2.25	2.50	2.50	2.25
2.50	2.25	2.50	2.25	Dichlorobenzene, 150 lb bbls wks.....lb.	17	.20	.20	.17
.20	.17	.20	.17	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
.55	.50	.55	.50	Nitroaniline, 300 lb bbls wks .....lb.	.48	.55	.55	.48
.55	.48	.59	.48	Nitrochlorobenzene, 1200 lb drs wks.....lb.	.23	.26	.26	.23
.26	23	.32	.32	Nitro-orthotoluidine, 300 lb bbls.....lb.	2.75	2.85	2.85	2.75
2.85	2.75	2.85	2.75	Nitrophenol 185 lb bbls....lb.	.45	.50	.50	.45
.55	.45	.55	.50	Nitrosodimethylaniline, 120 lb. bbls.....lb.	.92	.94	.94	.92
.94	.92	.94	.92	Nitrotoluene, 350 lb bbls....lb.	.29	.31	.31	.29
.31	.29	.30	.30	Phenylenediamine, 350 lb bbls .....lb.	1.15	1.20	1.20	1.15
1.20	1.15	1.20	1.15	Toluenеulfonamide, 175 lb bbls.....lb.	.70	.75	75	.70
.75	.70	.41	.40	Toluenesulfonchloride, 410 lb bbls wks.....lb.	.20	.22	.22	.20
.22	.20	.22	.20	Toluidine, 350 lb bbls wk...lb.	.38	.40	.40	.38
.42	.38	.42	.40	Paris Green, Arsenic Basis				
.27	25	.25	.20	100 lb kegs.....lb.	.....	.27	.27	.27
.25	.23	.23	.17	250 lb kegs.....lb.	.....	.25	.25	.25
.25	.25	.....	.....	Persian Berry Ext., bbls.....lb.	.25	Nom.	Nom.	.25
				Pentasol (see Alcohol, Amyl)...				
				Pentasol Acetate (see Amyl Acetate)				
.02½	.02	.03	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02	.02½	.02½	.02
.16	13	.13	.20	Phenol, 250-100 lb drums.....lb.	.14½	.15	.15	.14½
				Phenyl - Alpha - Naphthylamine,				
1.35	1.35	1.35	1.3.	100 lb kegs.....lb.	.....	1.35	1.35	1.35
				Phenylhydrazine Hydrochloride .....lb.	2.90	3.00	3.00	2.90

Phosphate

				Phosphate Acid (see Superphosphate)				
				Phosphate Rock, f.o.b. mines				
3.15	3.00	3.15	3.00	Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
4.00	3.50	3.65	3.50	70% basis.....ton	3.75	4.00	4.00	3.75
4.50	4.00	4.15	4.00	72% basis.....ton	4.25	4.50	4.50	4.25
5.50	5.00	5.00	5.00	75-74% basis.....ton	5.25	5.50	5.50	5.25
5.75	5.75	5.75	5.75	75% basis.....ton	.....	5.75	5.75	5.75
6.25	6.25	6.25	6.25	77-76% basis.....ton	.....	6.25	6.25	6.25
5.00	5.00	5.00	5.00	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
				Phosphorous Oxychloride 175 lb cyl.....lb.	.20	.25	.25	.20
.40	.20	.40	.35	Red, 110 lb cases.....lb.	.37½	.42	.42	.37½
.60	.37½	.65	.60	Yellow, 110 lb cases wks..lb.	.31	.37½	.37½	.31
.32	.31	.32	.32	Sesquisulfide, 100 lb cs.....lb.	.....	.44	.44	.44
.46	.44	.46	.46	Trichloride, cylinders.....lb.	.20	.25	.25	.20
.35	.20	.....	.....	Phthalic Anhydride, 100 lb bbls wks.....lb.	.16	.18	.20	.16
.20	.18	.20	.18	Pigments Metallic, Red or brown				
45.00	37.00	45.00	37.00	bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00
				Pine Oil, 55 gal drums or bbls				
.64	.63	.64	.63	Destructive dist.....lb.	.63	.64	.64	.63
10.60	8.00	10.60	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.70	.65	.70	.70	Steam dist. bbls.....gal.	.65	.70	.70	.65
				Pitch Hardwood,..... wks.....ton	40.00	45.00	45.00	40.00
45.00	40.00	45.00	40.00	Plaster Paris, tech, 250 lb bbls .....bbl.	3.30	3.50	3.50	3.30
3.50	3.30	3.30	3.30					

Potash

.07½	.06½	.07½	.07½	Potash, Caustic, wks, solid...lb.	.06½	.06½	.06½	.06½
.07½	.0705	.07½	.07½	flake .....lb.	.0705	08	.08	.0705
				Potash Salts, Rough Kainit				
9.10	9.00	9.00	9.00	12.4% basis bulk.....ton	.....	9.20	9.20	9.10
9.60	9.50	9.50	9.50	14% basis.....ton	.....	9.70	9.70	9.60
				Manure Salts.....				
12.50	12.40	12.40	12.40	20% basis bulk.....ton	.....	12.65	12.65	12.50
18.95	18.75	18.75	18.75	30% basis bulk.....ton	.....	19.15	19.15	18.95
				Potassium Acetate.....lb.	.27	.30	.30	.27
36.75	36.40	36.40	36.40	Potassium Muriate, 80% basis bags.....ton	.....	37.15	37.15	36.75
27.50	27.00	27.00	27.00	Pot. & Mag. Sulfate, 48% basis bags.....ton	.....	27.80	27.80	27.50
47.75	47.30	47.30	47.30	Potassium Sulfate, 90% basis bags.....ton	.....	48.25	48.25	47.75
.14	.09½	.09½	.09	Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.09½	.10	.10	.09½
.09½	.09	.09½	.08½	Bichromate Crystals, 725 lb casks.....lb.	.09	.09½	.09½	.09
.13½	.13	.12½	.12	Powd., 725 lb cks wks....lb.	.13	.13½	.13½	.13

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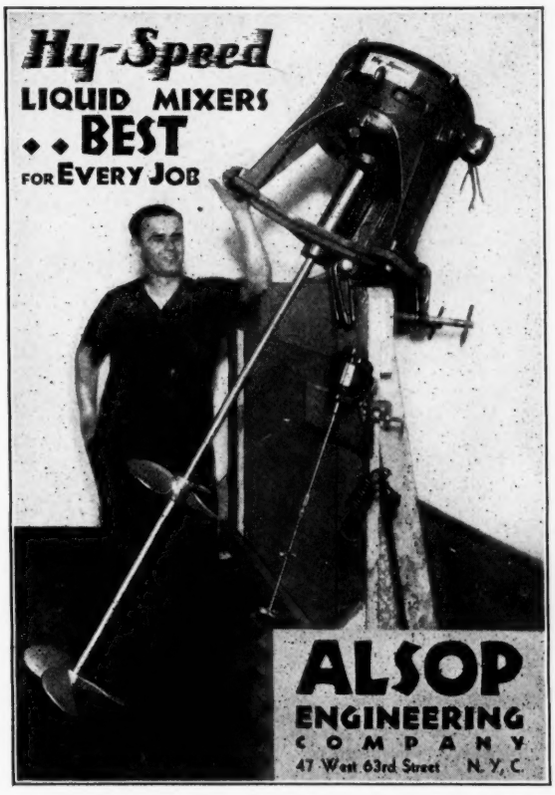

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

has been reflected in somewhat higher prices. Bone dry is now at 38c lb., garnet at 31c lb., superfine at 32c lb., and TN at 29c lb. Shellac imports during February of this year amounted to 1,983,988 pounds, valued at $668,711, as compared with 1,906,261 pounds, worth $693,880 in January, a decline of about $25,000 in value but a gain of some 76,000 pounds in quantity. Crude, seed, button, and stick-lac imports totaled 352,952 pounds, having a value of $96,179, as against 276,988 pounds, with a worth of $79,316, during January. Receipts of stick-lac from Singapore fell off from 1,070,774 pounds, having a value of $167,219 in 1928, to 453,440 pounds, valued at $116,606 last year.

Soda Ash — Shipments have been well ahead of those of last month as they approach the regular Springtime peak which is seasonally normal. The soap industry, particularly is calling for large quantities of ash, while the flat glass industry is generally off in its requirements. The alkali group generally exceeded sales forecast for April, which was only about 2 to 3 per cent below April of last year.

Soda Caustic — Here, too, shipments have been well ahead of those of March. Although the rayon industry is below normal in its activity and calling for less caustic as a result, the petroleum industry has been making very heavy demands for this material.

Sodium Acetate — A very firm situation has developed in this market and prices have advanced accordingly to a basis of 5c @ 5½c lb.

Sodium Nitrate — Deliveries are moving forward under contract in somewhat increased volume and quoted prices remain unchanged at previous levels. There is still considerable resale material available below these prices and that is taking care of spot sales. It is thought that May and June will find increased activity in new business. Deliveries from ports for the period July, 1929-March, 1930, says Aikman (London), Ltd.'s report, show a diminution as compared with the figures for the same period of last year of 10,500 tons in Europe, 205,000 tons in the United States and 15,000 tons in Japan and other countries. As it is the general opinion that deliveries during the next three months will, partly owing to the earliest season in Europe, be inferior to those of last year, the world's total deliveries for the twelve months July, 1929-June, 1930, can scarcely exceed 2,400,000 tons, against 2,694,000 tons for the previous twelve months. The annual production of Chilean nitrate, based on twice the output of July-December, 1929, which can be taken as a fair basis, amounts to about 32,380,000 metric quintals, or

1929 High	1929 Low	1928 High	1928 Low		Current Market		1930 High	1930 Low
.17	.14	.17	.16	Binoxiate, 300 lb bbls.....lb.	.14	.17	.17	.14
.30	.30	.30	.30	Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30
.05¾	.05¾	.05¼	.05¼	Carbonate, 80-85% calc. 800 lb casks.....lb.	.05¾	.05¾	.05¼	.05¼
.09	.08½	.09	.06½	Chlorate crystals, powder 112 lb keg wks.....lb.	.08½	.09	.09	.08½
.05½	.05½	.05½	.05½	Chloride, crys bbls.....lb.	.05½	.06	.06	.05½
.28	.23	.28	.27	Chromate, kegs.....lb.	.23	.28	.28	.23
.57½	.55	.57½	.55	Cyanide, 110 lb. cases.....lb.	.55	.57½	.57½	.55
.13	.11½	.12	.11½	Metabisulfite, 300 lb. bbl...lb.	.12	.13	.13	.12
.24	.16	.17	.16	Oxalate, bbls.....lb.	.20	.24	.24	.20
.12	.11	.12	.11	Perchlorate, casks wks.....lb.	.11	.12	.12	.11
.16½	.16	.15½	.15	Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.16	.16½	.16½	.16
.40	.38	.38	.37	Prussiate, red, 112 lb keg...lb.	.38	.40	.40	.38
.21	.18½	.18½	.18	Yellow, 500 lb casks.....lb.	.18½	.21	.21	.18½
.51	.51	.51	.51	Tartrate Neut, 100 lb keg..lb.	.....	.21	.21	.21
.25	.21	.25	.25	Titanium Oxalate, 200 lb bbls .....lb.	.21	.23	.23	.21
5.00	5.00	..	....	Propyl Furoate, 1 lb tins.....lb.	.....	5.00	5.00	5.00
.05	.04	.05	.04	Pumice Stone, lump bags.....lb.	.04	.05	.05	.04
.06	.04½	.06	.04½	250 lb bbls.....lb.	.04½	.06	.06	.04½
.03	.02½	.03	.02½	Powdered, 350 lb bags.....lb.	.02½	.03	.03	.02½
.03½	.03½	.03½	.03½	Putty, commercial, tubs..100 lb.	.....	.03½	.03½	.03½
.05½	.05½	.05½	.05½	Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½
1.75	1.50	1.50	1.50	Pyridine, 50 gal drums.....gal.	1.50	1.75	1.75	1.50
.13½	.13	.13	.13	Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	13¾	.13¾	.13
.04	.03	.04	.03	Quebracho, 35% liquid tks....lb.	.03	.04	.04	.03
.04½	.03½	.04	.03½	450 lb bbls c-1.....lb.	.03½	.03¾	.03¾	.03½
.04½	.05½	.05	.04	35% Bleaching, 450 lb bbl .lb.	.04½	.05½	.04½	.05½
.05½	.05½	.05	.05	Solid, 63%, 100 lb bales cif..lb.	.05	.05½	.05½	.05
.05½	.05½	.05	.05	Clarified, 64%, bales.....lb.	.....	.05½	.05½	.05½
.06	.05½	.06	.05½	Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.06	.05½
.13	.10	.13	.10	Solid, 100 lb boxes.....lb.	.10	.13	.13	.10
14.00	14.00	14.00	14.00	Bark, Rough.....ton	.....	14.00	14.00	14.00
35.00	34.00	35.00	34.00	Ground.....ton	34.00	35.00	35.00	34.00
.46	.44	.46	.45	R Salt, 250 lb bbls wks.....lb.	.40	.44	.45	.40
.18	.18	....	.....	Red Sanders Wood, grd bbls..lb.	.....	.18	.18	.18
1.25	1.15	1.35	1.25	Resorcinol Tech, cans.....lb.	1.15	1.25	1.25	1.15
.62	.57	.57	.57	Rosin Oil, 50 gal bbls, first run .....gal.	.57	.58	.58	.57
.64	.60	.62	.62	Second run.....gal.	.60	.61	.61	.60

Rosin

				Rosins 600 lb bbls 280 lb...unit				
9.25	7.45	9.75	8.20	B.....	.....	6.45	7.75	6.45
9.25	7.70	9.80	8.25	D.....	.....	7.00	8.00	7.00
9.27	8.30	9.95	8.60	E.....	.....	7.40	8.17	7.40
9.27	8.40	10.10	8.65	F.....	.....	7.65	8.45	7.65
9.45	8.40	10.10	8.75	G.....	.....	7.70	8.45	7.70
9.50	8.40	10.10	8.75	H.....	.....	7.75	8.55	7.75
9.50	8.40	10.15	8.80	I.....	.....	7.75	8.58	7.75
9.55	8.45	10.15	8.85	K.....	.....	7.77	8.65	7.77
9.85	8.50	10.30	8.85	M.....	.....	7.80	8.80	7.80
10.30	8.93	11.00	9.15	N.....	.....	8.20	8.95	8.20
11.30	9.00	11.65	10.15	WG.....	.....	8.25	9.25	8.25
12.30	9.30	12.65	10.40	WW.....	.....	8.50	9.85	8.50
30.00	24.00	30.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.08	.05	.08	.07	Lump, imported, bbls.....lb.	.05	.07	.07	.05
.12	.09	.12	.09	Selected bbls.....lb.	.09	.12	.12	.09
.05	.02	.05	.02	Powdered, bbls.....lb.	.02	.05	.05	.02
.05	.04½	.05	.04½	Sago Flour, 150 lb bags.....lb.	.04½	.05	.05	.04½
1.00	1.00	.....	.....	Sal Soda, bbls wks.....100 lb.	....	1.00	1.00	1.00
24.00	19.00	20.00	19.00	Salt Cake, 94-96% c-1 wks. .ton	20.00	24.00	24.00	20.00
21.00	12.00	17.00	15.00	Chrome .....ton	22.00	25.00	25.00	20.00
.06½	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½
.01½	.01½	.01½	.01½	Satin, White, 500 lb bbls.....lb	.....	.01½	.01½	.01½
.61	.47	.62½	.49	Shellac Bone dry bbls.....lb.	.....	.38	.47	.36
.45	.40	.55	.45	Garnet, bags.....lb.	.. ..	.31	.40	.31
.47	.39	.58	.47	Superfine, bags.....lb.	.....	.32	.39	.31
.44	.36	.55	.42	T. N. bags.....lb.	.....	.29	.34	.28
.57	.53	.57	.53	Schaeffer's Salt, kegs.....lb.	.53	.57	.57	.53
11.00	8.00	11.00	8.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
30.00	22.00	30.00	22.00	Refined, floated bags.....ton	22.00	30.00	30.00	22.00
32.00	32.00	.....	.....	Air floated bags.....ton	.....	32.00	32.00	32.00
40.00	32.00	40.00	32.00	Extra floated bags.....ton	32.00	40.00	40.00	32.00
22.00	15.00	22.00	15.00	Soapstone, Powdered, bags f. o. b. mines.....ton	15.00	22.00	22.00	15.00

Soda

				Soda Ash, 58% dense, bags c-1				
1.40	1.40	1.40	1.40	wks.....100 lb.	.....	1.40	1.40	1.40
1.34½	1.34½	2.29	2.40	58% light, bags.....100 lb.	.....	1.34½	1.34½	1.34½
1.32	1.32	1.32½	1.32½	Contract, bags c-1 wks.100 lb.	.....	1.32	1.32	1.32
3.35	3.35	4.21	4.16	Soda Caustic, 76% grnd & flake drums.....100 lb.	.....	3.35	3.35	3.35
2.95	2.95	3.91	3.76	76% solid drs.....100 lb.	.....	2.95	2.95	2.95
2.90	2.90	3.00	3.00	Contract, c-1 wks.....100 lb.	.....	2.90	2.90	2.90
.06½	.04¾	.05	.04½	Sodium Acetate, tech....450 lb. bbls wks.....lb.	.05	.05½	.05½	.04
.19	.18	.....	.....	Arsenate, drums.....lb.	.18	.19	.19	.18
1.50	.75	.....	.....	Arsenite, drums.....gal.	.75	1.00	1.00	.75
2.41	2.41	2.41	2.41	Bicarb, 400 lb bbl NY..100 lb.	.....	2.41	2.41	2.41

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Stearates

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MANUFACTURING CHEMISTS

55 - 33 RD STREET

BROOKLYN, N. Y.

BUSH TERMINAL BLDG.. NO. 9

about 3,185,000 English tons. Taking into account the closing down of oficinas referred to above, and some consequent increase of output on the part of oficinas which remain open, total production for July, 1930-June, 1931, can be approximately estimated at 23,850,000 metric quintals, or 2,345,000 English tons. On the basis of a consumption of 2,400,000 tons for the year ended June 30, 1930, the supply in sight for the world at that date is likely to reach 2,150,000 tons, so that on an estimated production July, 1930-June, 1931, of 2,345,000 tons, a consumption (after allowing for losses and loss in weight) of about 3,200,000 tons would be required for that period to bring the world's supply at June 30, 1921, down to a normal figure of about 1,250,000 tons.

Sodium Sulfide — Prices are reported as being firmer especially since European producers have advanced prices in line with smaller stocks.

Superphosphate — Production of bulk superphosphate during February was 393,150 short tons, according to reports to the Department of Commerce by 80 concerns operating 170 plants. This compares with 476,130 tons produced in January, and with 322,313 tons during February, 1929. Shipments to consumers during February totaled 102,612 tons, against 76,184 tons during January, and with 128,242 tons during February last year. Stocks of bulk superphosphate at the close of the month were 1,241,000 tons. compared with 1,386,000 tons at the end of January and with 1,479,000 tons at the end of February last year.

Turpentine — Due to heavy receipts and light demand, prices have declined during the past month so that quotations are now at 51c @ 57c gal. on spirits and 49c gal. on wood distilled.

OILS AND FATS

Chinawood Oil—Demand has been so small as to be almost lacking entirely during the past month. As a result prices have declined to new low levels with tanks at the Coast quoted at 9⅞c lb., tanks at New York at 10½c lb., and barrels, New York, at 11½c lb. It is thought that the ultimate passing of the tariff bill will stimulate trade in this as in other lines. March exports from Hankow totaled 12,260,000 pounds of which 10,374,000 pounds went to this country and 1,886,000 pounds to Europe. Estimated stocks at Hankow at the end of March were approximately 2,800 short tons. March shipments of oil from Hankow to the United States were less than those of February, when shipments totaled 12,

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
.07¾	.07	.07	.06¼	Bichromate, 500 lb cks wks. lb.	.07	.07½	.07½	.07
.04	.04	.04	.04	Bisulfite, 500 lb bbl wks. . . . lb.	.....	.04	.04	.04
1.35	1.30	1.35	1.30	Carb. 400 lb bbls NY. . 100 lb.	.....	2.30	2.30	2.30
.11	.06½	.06¾	.05¾	Chlorate, ... wks. . lb.	.07½	.08	.08	.07½
13.00	12.00	13.00	12.00	Chloride, technical. . . . . ton	12.00	13.00	13.00	12.00
.20	.18	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks. . . . . lb.	.18	.20	.20	.18
.09	.08½	.09	.08¾	Fluoride, 300 lb bbls wks. . . lb.	.08¼	.08½	.09	.08¼
.24	.22	.24	.22	Hydrosulfite, 200 lb bbls f. o. b. wks. . . . . lb.	.22	.24	.24	.22
.05	.05	.05	.05	Hypochloride solution, 100 lb cbys. . . . . lb.	.....	.05	.05	.05
3.05	2.50	3.05	2.65	Hyposulfite, tech, pea cyrs 375 lb bbls wks. . . . . 100 lb.	2.50	3.00	3.00	2.50
2.65	2.40	2.65	2.40	Technical, regular crystals 375 lb bbls wks. . . . 100 lb.	2.40	2.65	2.65	2.40
.45	.45	.45	.45	Metanilate, 150 lb bbls. . . . lb.	.....	.45	.45	.45
.02½	.02½	.....	.....	Monohydrate, bbls. . . . . lb.	.....	.02½	.02½	.02½
.57	.54	57	.55	Naphthionate, 300 lb bbl. . . lb.	.54	.57	.57	.54
2.22½	2.09	2.45	2.12½	Nitrate, 92%, crude, 200 lb bags c-1 NY. . . . . 100 lb.	.....	2.10	2.22½	2.10
.08	.07½	.08¼	.07½	Nitrite, 500 lb bbls spot. . . . lb.	.07½	.08	.08	.07½
.27	.25	.27	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks. . . . . lb.	.25	.27	.27	.25
.42	.37	.23	.20	Oxalate Neut, 100 lb kegs. . lb.	.37	.42	.42	.37
.22	.18	.22	.21	Perborate, 275 lb bbls. . . . lb.	.18	.20	.20	.18
3.55	3.25	3.55	3.25	Phosphate, di-sodium, tech. 310 lb bbls. . . . . 100 lb.	3.00	3.25	3.25	3.00
4.00	3.90	.....	.....	tri-sodium, tech, 325 lb bbls. . . . . 100 lb.	3.60	4.00	4.00	3.60
.72	.69	.72	.69	Picramate, 100 lb kegs. . . . . lb.	.69	.72	.72	.69
.12½	.12	.12½	.12	Prussiate, Yellow, 350 lb bbl wks. . . . . lb.	.12	.12½	12½	.12
.20	.15	.14	.13½	Pyrophosphate, 100 lb keg. . lb.	.15	.20	.20	.15
1.65	1.65	1.45	1.20	Silicate, 60 deg 55 gal drs, wks . . . . . 100 lb.	.....	1.65	1.65	1.65
.80	.70	1.10	.85	40 deg 55 gal drs, wks . . . . . 100 lb.	.70	.80	.80	.70
.05½	.05	.05	.05	Silicofluoride, 450 lb bbls NY . . . . . lb.	.05½	.05½	.05½	.05½
.43	.38	.49	.48½	Stannate, 100 lb drums. . . . lb.	.....	.38	.43	.38
.29	.25	.29	.18	Stearate, bbls. . . . . lb.	.25	29	.29	.25
.18	.16	.18	.16	Sulfanilate, 400 lb bbls. . . . lb.	.16	.18	.18	.16
.02¾	.02¾	.02¾	.02½	Sulfate Anhyd, 550 lb bbls c-1 wks. . . . . lb.	.02½	.02¾	.02¾	.02½
.02¾	.02½	02¾	.02½	Sulfide, 80% crystals, 440 lb bbls wks. . . . . lb.	.02½	.02¾	.02¾	.02½
.04	.03½	.04	.03½	62% solid, 650 lb drums 1c-1 wks. . . . . lb.	.03	.03½	.03½	.03
.03½	.03	.03½	.03½	Sulfite, crystals, 400 lb bbls wks. . . . . lb.	.03	.03½	.03½	.03
.76	.28†	.50	.40	Sulfocyanide, bbls. . . . . lb.	.28	.35	.35	.28
1.40	.88	.85	.80	Tungstate, tech, crystals, kegs . . . . . lb.	.....	.88	.88	.88
.40	.35	.40	.35	Solvent Naphtha, 110 gal drs wks. . . . . gal.	.35	40	.40	.35
.01½	.01½	.01½	.01½	Spruce, 25% liquid, bbls. . . . . lb.	.....	.01½	.01½	.01½
.01	.01	.01	.01	25% liquid, tanks wks. . . . . lb.	.....	.01	.01	.01
.02¼	.02	.02¼	.02	50% powd, 100 lb bag wks lb.	.02	.02¼	.02¼	.02
4.12	3.82	4.42	3.07	Starch, powd., 140 lb bags . . . . . 100 lb.	3.72	4.02	4.02	3.72
4.02	3.72	4.32	2.97	Pearl, 140 lb bags. . . . . 100 lb.	3.62	3.82	3.92	3.62
.06¾	.05¾	.06¾	.05¾	Potato, 200 lb bags. . . . . lb.	.05¾	.06¼	.06¼	.05¾
.06¾	.05¾	.06¾	.05¾	Imported bags. . . . . lb.	.05¾	.06¼	.06¼	.05¾
.08¼	08	.08¼	.08	Soluble. . . . . lb.	.08	.08¼	.08¼	.08
.10	.09¼	.10	.09¼	Rice, 200 lb bbls. . . . . lb.	.09¼	.10	.10	.09¼
.07	.06¼	.07	.06¼	Wheat, thick bags. . . . . lb.	.06¼	.07	.07	.06¼
.10	.09¼	.10	.09¼	Thin bags. . . . . lb.	.09¼	.10	.10	.09¼
.07¼	.07¼	.07¼	.07¼	Strontium carbonate, 600 lb bbls wks. . . . . lb.	.07¼	.07¼	.07¼	.07¼
.09¼	.08¼	.09	.08¼	Nitrate, 600 lb bbls NY. . . . lb.	.09	.09¼	.09¼	.09
1.25	1.25	.....	.....	Peroxide, 100 lb drs. . . . . lb.	.....	1.25	1.25	1.25
				Sulfur				
2.05	2.05	2.05	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-1. . . . . 100 lb.	.....	2.05	2.05	2.05
19.00	18.00	19.00	18.00	Crude, f. o. b. mines. . . . . ton	18.00	19.00	19.00	18.00
2.40	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-1 NY. . . . 100 lb.	.....	2.40	2.40	2.40
2.50	2.50	2.50	2.50	Heavy bags c-1. . . . . 100 lb.	.....	2.50	2.50	2.50
3.45	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-1 NY. . . . . 100 lb.	.....	3.45	3.45	3.45
2.85	2.65	2.85	2.65	Roll, bbls 1c-1 NY. . . . . 100 lb.	2.65	2.85	2.85	2.65
.05½	.05	.05½	.05	Sulfur Chloride, red, 700 lb drs wks. . . . . lb.	.05	.05½	.05½	.05
.04½	.03½	.04½	.03½	Yellow, 700 lb drs wks. . . . . lb.	.03½	.04½	.04½	.03½
.08½	.07	.08½	.08	Sulfur Dioxide, 150 lb cyl. . . . lb.	.07	.07½	.07½	.07
.19	.10	.19	.17	Extra, dry, 100 lb cyl. . . . . lb.	.10	.12	.12	.10
.65	10	.65	.10	Sulfuryl Chloride, 600 lb dr. . . lb.	.10	.65	.65	.10
15.00	12.00	15.00	12.00	Talc, Crude, 100 lb bgs NY. . . ton	12.00	15.00	15.00	12.00
18.00	16.00	18.00	16.00	Refined, 100 lb bgs NY. . ton	16.00	18.00	18.00	16.00
25.00	18.00	35.00	30.00	French, 220 lb bags NY. . . ton	18.00	22.00	22.00	18.00
45.00	35.00	45.00	38.00	Refined, white, bags. . . . ton	35.00	40.00	40.00	35.00
50.00	40.00	50.00	40.00	Italian, 220 lb bags NY. . . ton	40.00	50.00	50.00	40.00
55.00	50.00	55.00	50.00	Refined, white, bags. . . . ton	50.00	55.00	55.00	50.00
10.00	9.00			Superphosphate, 16% bulk, wks. . . . . ton	.....	9.50	9.50	9.50
4.50&10	4.00&10	5.10&10	4.65&10	Tankage Ground NY. . . . . unit	.....	3.75&10	4.00&10	3.75&10
4.80&10	3.75&10	4.80&10	3.90&10	High grade f.o.b. Chicago. unit	.....	3.85&10	3.85&10	3.75&10
4.80&10	4.35&10	5.00&10	4.60&10	South American cif. . . . . unit	.....	4.00&10	4.25&10	4.00&10
.05¾	.04¼	.05	.04¼	Tapioca Flour, high grade bgs. lb.	.05½	.05¾	.05¾	.05¾
.04¾	.03¾	.04	.03¾	Medium grade, bags. . . . . lb.	.04¾	.04¾	.04¾	.04¾
.27	.26	.27	.26	Tar Acid Oil, 15%, drums. . . . gal.	.24	.25	.27	.24
.30	.29	.30	.29	25% drums. . . . . gal.	.26	.28	.30	.26

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

316,000 pounds, but larger than the quantity received by this country in March 1929 when shipments only reached a total of 6,076,000 pounds. Imports for the first quarter of 1930 are 60 per cent greater than those of the corresponding quarter of 1929, amounting to 33,754,000 pounds, as compared with 21,155,465 pounds for the first quarter of 1929. Shanghai, which ranks second to Hankow in importance as a shipping port for tung oil, showed a substantial gain in exports during 1929. The comparative figures for 1928 and 1929 were, respectively, 3,083,013 pounds, value $391,812 and 5,095,905 pounds, value $593,465.

Coconut Oil — The market has been steady but quiet during the past month, with but little trading in evidence. It is thought that stocks in consumers' hands are fairly low due to the long-continued period of light buying and a revival of activity is looked for within the near future. Meanwhile prices have continued unchanged at quoted levels.

Corn Oil — The position of this material along with that of the competing product has improved somewhat during the past month, despite the fact that the market has continued rather easy. As a result prices are somewhat higher than when last quoted, with crude at 7⅞c lb. in tanks, and 9¾c lb. in barrels; and refined at 9c lb. in tanks and 10¼c lb. in barrels.

Cottonseed Oil—Has shown a fairly consistent improvement during the past month so that prices are about 2 to 5 points higher than when last quoted. Crude is also higher at 7⅜c lb., spot is at 8.8c lb., and futures at 9c lb. Indicated consumption of refined oil during March amounted to only 234,115 barrels. This compared with 282,943 barrels in the previous month, 322,996 barrels in January, 272,638 barrels in March last year and 372,660 barrels two years ago. Visible supply at the close of March in the shape of seed and oil was equal to 1,809,835 barrels of refined oil. This compared with 1,908,759 barrels at the close of the previous month, 1,992,683 barrels in the same month last year and 1,830,318 barrels two years ago. Receipts of seed at the mills from August 1 to March 31 were 4,788,413 tons against 4,965,761 tons in the corresponding period last season; crushed, 4,497,770 tons against 4,595,715 tons. Production of crude oil during the first eight months of the season ended with March was 1,399,075,211 pounds against 1,443,123,213 pounds in the same time last season; refined oil, 1,168,727,475 pounds against 1,227,915,168 pounds. Stocks of seed at the mills at the close of March were 330,560 tons against 388,079 tons at the

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
				Terra Alba Amer. No. 1, bgs or			
1.75	1.15	1.75	1.15	bbls mills.....100lb.	1.15	1.75	1.15
2.00	1.50½	2.00	1.50	No. 2 bags or bbls...100lb.	1.50	2.00	1.50
.02½	.01	02½	.02	Imported bags.....lb.	.01½	.01½	.01½
.09½	.09	.....	.....	Tetrachlorethane, 50 gal dr...lb.	.09	.09½	.09
.20	.20	.20	.20	Tetralene, 50 gal drs wks.....lb.	.....	.20	.20
.24	.22	.24	.22	Thiocarbanilid, 170 lb bbl....lb.	.22	.24	.24
				Tin Bichloride, 50% soln, 100 lb			
.14¾	.13½	.17½	.14¾	bbls wks.....lb.	.....	.12¾	.12¾
.38	.33	.41½	.36½	Crystals, 500 lb bbls wks...lb.	.31	.31½	.34
.48	.39	.58	.48	Metal Straits NY.....lb.	.....	.38	.38
.56	.42	.75	53	Oxide, 300 lb bbls wks.....lb.	.....	.40	.42
				Tetrachloride, 100 lb drs wks.			
.30½	.27½	.35½	.30¾	.....lb.	.....	.25¼	.25¾
50	22	.40	.40	Titanium Dioxide 300 lb bbl..lb	.22	.....	.50
14	.07½	.14	.13¾	Pigment, bbls.....lb.	.07½	.07¾	.07¾
.45	.45	.45	40	Toluene, 110 gal drs.....gal.	.....	.40	.40
.40	.40	.45	.35	8000 gal tank cars wks....gal.	.....	.35	.35
.94	.90	.94	.90	Toluidine, 350 lb bbls.....lb.	.90	.94	.94
.32	.31	.32	.31	Mixed, 900 lb drs wks.....lb.	.31	.32	.32
.95	.85	.90	.85	Toner Lithol, red, bbls.....lb.	.90	.95	.95
.80	.70	.80	.70	Para, red, bbls.....lb.	.....	.80	.80
1.55	1.50	1.80	1.70	Toluidine .....lb.	1.50	1.55	1.55
.36	.32	3.90	3.60	Triacetin, 50 gal drs wks.....lb.	.32	.36	.36
.10½	.10	.. ..	.....	Trichlorethylene, 50 gal dr...lb.	.10	.10½	.10½
.60	.55	.....	.....	Triethanolamine, 50 gal drs...lb.	.40	.42	.42
.45	.33	.50	.36	Tricresyl Phosphate, drs.....lb.	.33	.45	.45
.70	.58	.73	.69	Triphenyl guanidine.....lb.	.58	.60	.60
.75	.60	.75	.70	Phosphate, drums.....lb.	.60	70	.70
2.00	1.75	3.00	2.50	Tripoli, 500 lb bbls.....100 lb.	1.75	2.00	2.00
.65	.51¼	.66½	.50½	Turpentine Spirits, bbls.....gal.	.51	.67	.61½
.57	.49	.59	.46	Wood Steam dist. bbls....gal.	.....	.49	.52
.30	.15	.20	.18	Urea, pure, 112 lb cases.....lb	.15	.17	.17
105.00	98.00			Fert. grade, bags c.i.f. ....ton	.....	108.00	108.00
106.30	99.30			c. i. f. S. points.....ton	.....	109.30	109.30
				Valonia Beard, 42%, tannin			
55.00	42.00	76.00	55.00	bags.....ton	.....	40.00	40.00
35.00	30.00	55.00	58.00	Cups, 30-31% tannin.....ton	.....	27.00	27.00
43.00	35.00	64.00	45.00	Mixture, bark, bags.....ton	.....	32.00	32.50
2.05	2.00	2.10	1.75	Vermillion, English, kegs....lb..	1.75	1.80	2.05
1.00	1.00	.....	.....	Vinyl Chloride, 16 lb cyl.....lb.	.....	1.00	1.00
49.75	43.50	76.00	49.75	Wattle Bark, bags.....ton	.....	44.00	47.75
				Extract 55%, double bags ex-			
.06½	.06½	.06½	.05¾	dock.....lb.	.....	.06½	.06½
				Whiting, 200 lb bags, c-1 wks			
1.25	1.00	1.25	1.25	.....100 lb.	.....	1.00	1.00
13.00	13.00	13.00	13.00	Alba, bags c-1 NY.....ton	.....	13.00	13.00
1.35	1.35	1.35	1.35	Gilders, bags c-1 NY...100 lb	.....	1.35	1.35
.33	.33	.32	.32	Xylene, 10 deg tanks wks. ....lb.	.....	.31	.31
.32	.30	.32	.30	Commercial, tanks wks...gal.	.28	.33	.33
.38	.38	.38	.38	Xylidine, crude.....lb.	.....	.37	.38

Zinc

				Zinc Ammonium Chloride powd.,			
5.75	5.25	.05½	5.85	400 lb bbls.....100 lb.	5.25	5.75	5.75
.11	.10½	.10	.09½	Carbonate Tech, bbls NY..lb.	.10½	.11	.11
				Chloride Fused, 600 lb drs.			
.06	.05½	.06	.06	wks.....lb.	.05½	.06	.06
.06½	.06½	.06½	.06½	Gran., 500 lb bbls wks.....lb.	.06½	.06½	.06½
3.00	3.00	3.00	3.00	Soln 50%, tanks wks...100 lb.	.....	3.00	3.00
.41	.40	.41	.40	Cyanide, 100 lb drums.....lb	.40	.41	.41
1.00	1.00			Dithiofuroate, 100 lb dr....lb.	.....	1.00	1.00
.08¾	.08½	.09	.09	Dust, 500 lb bbls c-1 wks..lb.	.09½	.11	.11
				Metal, high grade slabs c-1			
6.45	6.45¾	6.40	6.07½	NY.....100 lb.	.....	6 45	6.45
.07¾	.07	.07¾	.07¾	Oxide, American bags wks..lb.	.07¾	.07¾	.07¼
.11¾	.09¾	.12¾	.10¾	French, 300 lb bbls wks...lb.	.09¾	.11¾	.11¾
1.25	1.25	.....	.....	Perborate, 100 lb drs.....lb.	.....	1.25	1.25
1.25	1.25	.....	.....	Peroxide, 100 lb drs.....lb.	.....	1.25	1.25
.26	.25	.....	.....	Stearate, 50 lb bbls.....lb.	.23½	.24	.26
.03¾	.03	.03¾	.03½	Sulfate, 400 bbl wks.....lb.	.03	.03½	.03¼
.32	.30	.32	.30	Sulfide, 500 lb bbls.....lb.	.30	.32	.32
.30	.28	.30	.29	Sulfocarbolate, 100 lb keg..lb.	.28	.30	.30
.03	.02½	.03	.02½	Zirconium Oxide, Nat. kegs..lb.	.02½	03	.03
.50	.45	.50	.45	Pure kegs.....lb.	.45	.50	.50
.10	.08	.10	.08	Semi-refined kegs.....lb.	.08	.10	.10

Oils and Fats

.13½	.13	.14½	.13	Castor, No. 1, 400 lb bbls.....lb.	.13	.13¼	.13½
.13	.12½	.14	.12½	No. 3, 400 lb bbls.....lb.	.12½	.13	.13
.15	.14	.17	.14	Blown, 400 lb bbls.....lb.	.14	.15	.15
.16	.14½	.17	.14½	China Wood, bbls spot NY...lb.	.....	.11½	.13
.15	.13½	.14¾	.14¾	Tanks, spot NY.....lb.	....	.10½	.11⅜
.14½	.12½	.14¼	.12¾	Coast, tanks, May.....lb.	.....	.09¾	.10⅜
.10¾	.10¾	.11½	.10¾	Cocoanut, edible, bbls NY....lb.	.....	.10¾	.10¾
.09½	.07½	.10	.09½	Ceylon, 375 lb bbls NY....lb.	.....	.08	.08¼
.08¾	.06½	.09	.08½	8000 gal tanks NY.....lb.	.06¾	.07	.07
.10	.09½	.10½	.09½	Cochin, 375 lb bbls NY....lb.	.08¾	.08¾	.09½
.09½	.08¾	.09¾	.08¾	Tanks NY.....lb.	.....	.08¼	.08½
.09¾	.07¼	.10	.08¾	Manila, bbls NY.....lb.	.07¾	.08¼	.08¼
.08¾	.06¾	.08¾	.08	Tanks NY.....lb.	.06¾	.07	.07¼
.08	.06¾	.08½	.07¾	Tanks, Pacific Coast.....lb.	.06¼	.06¾	.07

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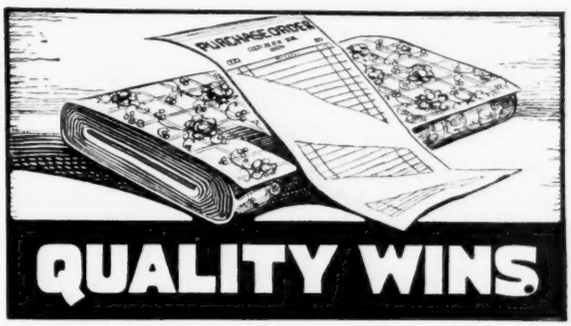

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1929 Average $1.039 - Jan. 1929 $1.026 - April 1930 $1.102

same time in the previous season; crude oil, 101,921,509 pounds against 107,120,650 pounds; refined oil, 535,890,768 pounds against 585,343,358 pounds. Exports of crude oil during seven months of the season ended with February were 18,043,352 pounds against 16,458,206 pounds in the corresponding period last year; refined oil, 3,125,052 pounds against 5,545,537 pounds last year.

Dog Fish Oil — Smaller catches due to poor weather have resulted in a somewhat smaller supply of this material and as a result prices have advanced and quotations are at 34c gal.

Linseed Oil — Prices have remained steady throughout the entire month and business has been very quiet. Here too, it is thought that the ultimate settlement of the tariff will stimulate demand once more. Quotations remain at the same level as when last quoted. Linseed oil production for the quarter ended March 31 totaled 145,969,802 pounds from 223,036 tons of flaxseed crushed, compared with 202,353,031 pounds of linseed oil secured from 303,503 tons of seed crushed in the corresponding quarter of 1929, according to figures compiled by the United States Census Bureau on the basis of returns from thirty mills. Stocks of flaxseed at mills at the close of the quarter totaled 81,154 tons, compared with 127,258 tons on the same date in 1929; stocks of linseed oil reported by crushers totaled 107,383,232 pounds, compared with 141,309,480 pounds last year. Imports of flaxseed for the quarter were 184,407 tons, compared with 162,885 tons in 1929, and imports of linseed oil totaled 1,673,555 pounds, against 215,722 pounds last year.

Olive Oil — Improved activity has been noted for foods although actual business continues rather light. Prices have been steady and offerings light.

Palm Oil — The outstanding feature in this market during the past month has neen the increasing scarcity of Niger oil which has advanced in price due to the shortage of supply and is now quoted at 7¼c lb. Otherwise, the market has been steady and routine in nature.

Rapeseed Oil — Of chief interest in this market has been the scarceness of the English grade, of which no spot stocks are at present available. Prices on this grade have advanced to a basis of 82c gal. Japanese is somewhat lower at 67c gal.

Soy Bean Oil — The past month has been characterized by routine business and quiet conditions prevailing in this market. Of chief note has been the upward price tendency of domestic oil which is now quoted at 8¼c lb.

1929 High	1929 Low	1928 High	1928 Low		Current Market	1930 High	1930 Low
				Cod, Newfoundland, 50 gal bbls			
.64	.57½	.69	.63	.....gal.	.....	.52	.56	.52
.60	.60	.63	.60	Tanks NY.....gal.	.54	.56	.62	.54
				Cod Liver see Chemicals.....				
.05½	.042	.06½	.05½	Copra, bags.....lb.	.....	.045	.046	043
.10¾	.09½	.11	.10	Corn, crude, bbls NY.....lb.	.....	.09¾	.10	.09¼
.09¼	.07¾	.10	.08¾	Tanks, mills.....lb.	.....	.07¾	.08	.07¾
.11¾	.10½	.12½	.11¼	Refined, 375 lb bbls NY....lb.	.....	.10¼	.10½	.10
.11	.09	.11½	.10¾	Tanks.....lb.	.....	.09	.09½	.08¾
.09	.08½	.09½	.07½	Cottonseed, crude, mill.....lb.	.....	.07¾	.07½	.07¼
.1075	.085	10.65	.09½	PSY 100 lb bbls spot.....lb.	.....	.088	.088	.085
.1080	.088	10.75	.09½	June—Aug.....lb.	.....	.09	.095	.085
				Degras, American, 50 gal bbls				
.05	.03½	.05	.04½	NY.....lb.	.03¼	.04½	.04½	.03½
.05¾	.04½	.05¾	.04½	English, brown, bbls NY....lb.	04¼	.05	.05	.04½
.05¼	.05	.05¼	05¼	Light, bbls NY .....lb.	.05	.05½	.05½	.05
				Dog Fish, Coast Tanks.....gal.	.....	.34	.34	.32
				Greases				
.08½	.06	.08½	.07	Greases, Brown.....lb.	.....	05½	.06½	.05½
.08½	.06½	.08½	.07	Yellow.....lb.	.....	.05¾	.07½	.05¾
.11¼	.07½	.11	.09½	White, choice bbls NY.....lb	.....	.07¼	.08½	.07¾
		.42½	.40	Herring, Coast, Tanks.....gal	.....	Nom.	.....	.....
Nom.	.....	Nom.	.09½	Horse, bbls.....lb.	.09½	Nom.	Nom.	.09½
.15¾	.14¾	.16½	.15½	Lard Oil, edible, prime.....lb.	.....	.13	.13½	.13
.13½	.12	.13½	.12	Extra, bbls.....lb.	.....	.11½	.12	.11½
.13½	.11¾	.13	.11	Extra No. 1, bbls.....lb.	.....	.10½	.11	.10¾
.162	.105	10.8	10.0	Linseed, Raw, five bbl lots...lb.	.....	.146	.146	.144
.158	.101	10.4	9.6	Bbls c-l spot.....lb.	.....	.142	.142	.14
.15	.093	9.6	8.8	Tanks.....lb.	.....	.134	.134	.132
.52	.45	.48	.40	Menhaden Tanks, Baltimore.gal.	.....	.50	.50	.50
.09	.09	.09	.09	Blown, bbls NY.....lb.	.....	.09	.09	.09
.70	.70	.70	.67	Extra, bleached, bbls NY..gal.	.....	.70	.70	.70
.64	.63	.64	.63	Ligh, pressed, bbls NY....gal.	.63	.64	.64	.63
.67	.66	.67	.66	Yellow, pressed, bbls NY..gal.	.66	67	.67	.66
				Mineral Oil, white, 50 gal bbls				
.60	.40	.60	.40	.....gal.	.40	.60	.60	.40
1.00	.95	1.00	.95	Russian, gal.....gal	.95	1.00	1.00	.95
.19	.18½	.19	.18¼	Neatsfoot, CT, 20° bbls NY lb.	.....	.17	.17¾	.17
.13½	.12	.13½	.12	Extra, bbls NY.....lb	.. ..	.10¾	.11¼	.10¾
.15½	.13½	.16½	.15½	Pure, bbls NY.....lb.	.....	.12¼	.13½	.12½
.11½	.10¾	.17¾	.11¾	Oleo, No. 1, bbls NY.....lb.	.. ..	.12½	.12½	.12½
.11½	.10	.15½	11	No. 2, bbls NY.....lb	.....	.10¼	.10¼	.10¼
.10¼	.09¾	.14	.10	No. 3, bbls NY.....lb.	.. ..	.10½	.10½	.10½
1.40	1.05	1.40	1.18	Olive, denatured, bbls NY...gal.	.95	1.00	1.00	.95
2.00	1.95	2.00	1.75	Edible, bbls NY.....gal	1.95	2 00	2.00	1.95
.11½	.08½	.11	.09¾	Foots, bbls NY.....lb.	.07¾	.07½	.08	.07¾
.09	.08	.09½	.08¾	Palm, Kernel, Casks.....lb.	.07¾	.07¾	.08¼	.07¾
.09	.07½	.09½	.07¾	Lagos, 1500 lb casks.....lb.	.07¾	.07¾	.07¾	.07¾
.08¾	.07	.08¾	.07	Niger, Casks.....lb.	.....	.07¼	.07½	.06¾
Nom.	.....	.12½	.12	Peanut, crude, bbls NY.....lb.	.....	Nom.	Nom.	.....
.15	.14½	.17	.14½	Refined, bbls NY.....lb.	.14½	15	.15	.14½
.20	.15	.21	.13	Perilla, bbls NY.....lb.	.....	.13	.14½	.13
15¾	.13	.15½	.10½	Tanks, Coast.....lb.	.....	.11	.11½	.10¾
1.75	1.70	1.75	1.70	Poppyseed, bbls NY.....gal.	1.70	1.75	1.75	1.70
1.04	1.04	1.06	1.01	Rapeseed, blown, bbls NY...gal.	1.00	1.00	1.00	1.00
.90	.82	.92	.83	English, drms. NY.....gal.	.....	.82	.82	.80
.88	.72	.90	.81	Japanese, drms. NY.....gal.	.....	.67	.70	.67
.11¼	.10¼	.10¾	.09½	Red, Distilled, bbls.....lb.	.10½	.10¾	.10¾	.10¾
10½	.09½	.09½	.08	Tanks.....lb	.....	.09½	.09½	.09½
.44	.42	.50	42	Salmon, Coast, 8000 gal tks..gal.	.....	Nom.	.44	.42
.51	.45	.50	41	Sardine, Pacific Coast tks...gal.	.....	.35	.42	.35
.12	.11¼	.13½	.12	Sesame, edible, yellow, dos...lb.	.11½	.12	.12	.11½
.12¼	.12½	.15	.12½	White, dos.....lb.	.12½	.12½	.12½	.12½
.40	.40	.40	.40¾	Sod, bbls NY.....gal..	.....	.40	.40	.40
		.....	.....	Soy Bean, crude.....				
.10¾	.09	.09¾	.09	Pacific Coast, tanks.....lb.	.....	.09	.09½	.09
				Domestic tanks, f.o.b. mills,				
.10¼	.08½			.....lb.	.....	.08½	.08½	.07¾
.12¾	.11¼	.12½	.12	Crude, bbls NY.....lb.	.....	.10¾	.10¾	.10¼
.11½	.10½	.10¾	.10½	Tanks NY.....lb.	.....	.09¾	.09¾	.09¼
.13½	.13½	.13¾	.13½	Refined, bbls NY.....lb.	.13½	.13½	.13½	.13½
				Sperm, 38° CT, bleached, bbls				
.85	.84	.85	.84	NY.....gal.	.84	.85	.85	.84
.80	.79	.80	.79	45° CT, bleached, bbls NY gal.	.79	.80	.80	.79
				Stearic Acid, double pressed dist				
.18½	.15½	.18½	.11	bags.....lb.	.14½	.15	.15	.14½
				Double pressed saponified bags				
.19	.15¾	.19	.11¼	.....lb.	.15	.15½	.15½	.15
20½	.17¾	.20½	.13½	Triple, pressed dist bags..lb	.16½	.17	.17	.16½
.12	.09¾	.12½	.09¼	Stearine, Oleo bbls.....lb.	.09	.09¼	.09½	.08¾
.08¾	.07	.09¼	.08¼	Tallow City, extra loose.....lb.	.....	.06¾	.07¼	.06¾
.10½	.08	.10½	.09½	Edible, tierces.....lb.	.07¾	.07½	.09¼	.07¾
.12	.10¾	.12½	.11½	Tallow Oil, Bbls, c-1 NY...lb.	.....	.09½	.11	.09¾
.11	.09¾	.11½	.10½	Acidless tanks NY.....lb.	.....	.08¾	.10	.08¾
Nom.	.08	Nom.	.08	Vegetable, Coast mats.....lb.	.08	Nom.	Nom.	.08
.12	.11	.11	.....	Turkey Red, single bbls.....lb.	.11	.12	.12	.11
.16	.14	16	.14	Double, bbls .....lb.	.14	.16	.16	.14
				Whale, bleached winter, bbls				
.80	.74	.80	.78	NY.....gal.	.....	.74	.74	.74
.82	.75	.82	.80	Extra, bleached, bbls NY..gal.	.....	.76	.76	.76
.78	.73	.78	.76	Nat. winter, bbls NY.....gal.	.....	.73	.73	.73

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"WE"—Editorially Speaking

Repercussions of our editorial on "Packaged Chemicals" continue to jolt the not-too-even tenor of our life. We have a mild protest from Mr. Boyer and a violent one from Mr. Chew to the general effect that there is no place on earth where they are more at home than in "the plush and purple offices of department store buyers" and that they have for years devoted their best selling efforts against "charming young ladies with Vassar (and other) backgrounds." Directly we have heard nothing from Dr. Davidson. Indirectly a rumor reaches us that he is wrestling with the problem of whether to sue us for libel or send us a check for advertising. And, if so, either way, how much? His recent promotion should cinch the matter.

As a measure of self-defence we are constrained to serve notice on all ambitious junior executives, keen to bring themselves to the favorable attention of their directors, that our editorial pages are not for sale.

Although Phillip H. Groggins is an old friend and contributor, we find that, through some oversight, we have never formally introduced him to readers of CHEMICAL MARKETS. He began his training as a member of the staff of E. I. du Pont de Nemours & Company. For almost a decade, 1912-1921, he enjoyed the advantages of a sound practical training in that organization. Commencing his duties in the laboratory he was soon entrusted with the supervision of plant activities in several of its factories in the United States. In 1916 he was sent to the Canadian Explosives, Ltd., an affiliated organization, and at two of its plants made investigations and supervised the operation and construction of acid plants. In the fall of 1917, Mr. Groggins returned to the Gibbstown plant of the du Pont company. After some preliminary work there in the acid and power departments he was put in charge first of the diphenylamine operations, and subsequently of the aniline plant. During this period he founded and edited the "du Pont Dynam Item" a plant journal having a fairly wide circulation. In 1921, he organized the "Veribest Chemical Inc." and started the manufacture of p-nitroaniline by aminating p-nitro-chloro-benzene. This plant was subsequently amalgamated with others of the Tower Manufacturing Company, Newark, N. J. For four years he was associated with the latter organization in the production of intermediates. In 1925, he became associated with Monsanto Chemical Works where he made some investigations and supervised the construction of a plant for the manufacture of intermediates. In November, 1926, he joined the forces of the Department of Agriculture and is stationed at the Color and Farm Waste Division Laboratory. He is now engaged in conducting investigations leading to the commercial utilization of industrial by-products and in the preparation of intermediates for vat dyes. The latter activity is used as a vehicle for studying the several unit processes in chemical engineering. He is the author of "Aniline and Its Derivatives" and of a large number of short technical papers.

John Clarke who describes for us the origin and manufacture of shellac, is partner in the firm of Knight & Clarke, New York consulting chemists specializing in shellac and resins. He was a special student in chemistry at Columbia and New York Universities from 1908 to 1912, and after two years in business, engaged in private research work in resins. This was terminated by his enlistment in the Canadian Army with which he saw service from 1917 to 1919. At the end of that period, he entered the laboratory of Dr. P. C. McIlhiney, and in 1923 at the latter's death, became a member of the partnership which took over the former business.

COMING FEATURES

X-RAYS IN THE CHEMICAL INDUSTRY

Dr. George L. Clark discusses the possibilities of applying x-rays industrially in the chemical industry.

PROFITS IN DUST CONTROL

E. H. deConingh gives a practical demonstration of the dollars and cents which may be saved through dust control.

MARS—THE CHEMICAL INDUSTRIALIST

Williams Haynes writes of the chemical developments arising out of the World War.

A subscriber who delves in such matters, after reading last month's article on leather, hastens to assure us that one Agabtakha, in 1250 B. C., fled from Hanigalbat to Babylon and continued there his trade of leather-worker, which at that time was common in the districts of the Upper Euphrates where the dwarf oaks used in tanning are plentiful still. Lynchburg, Va. papers please copy.

Another CHEMICAL MARKETS "first"—the first congratulations upon our double anniversary this month came from the able assistant to Dr. Killheffer Giles Low who writes in reply to our request for some data regarding the history of the Newport Company during the past decade: "Thank you for your manner of celebrating your tenth anniversary as publisher of CHEMICAL MARKETS. It is certainly a novel thing for advertisers not to get hit for extra advertising space."

Others among our ten-year-advertisers who have sent us particularly graceful good wishes are:

J. M. Selden, Jr., of the Selden Company: "It has been a profitable pleasure to continue advertising with you for the past ten years and we want to compliment you on the great progress CHEMICAL MARKETS has made during this period."

George Merck of Merck & Company: "First let me congratulate you on your tenth birthday as publisher of CHEMICAL MARKETS. Kind regards and warm congratulations for rounding out the decade so successfully."

H. L. Derby of the Kalbfleisch Corporation: "We have been a continued advertiser with you for the very good business reason that we regard CHEMICAL MARKETS as the outstanding publication in the field. Its progressive policy and wide circulation make it, we believe, an ideal medium through which to reach the trade. I congratulate you on your success and hope that the next ten years will bring you increasing prosperity."

For the first time since we inaugurated our "roto section" as a regular feature, we are reproducing this month some pictures which were actually voluntarily contributed. Now that the way has been opened, we hope there will be more of this, and we herewith thank the trail-blazers for their contributions.

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- Carbon Tetrachloride 99.9%
- Caustic Soda
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- Epsom Salt
- Ethyl Bromide
- Ethyl Chloride
- Ferric Chloride
- Ferrous Chloride
- Phenol
- Magnesium Chloride
- Monochlorbenzene
- Monochloracetic Acid
- Sodium Sulphide
- Sulphur Chloride

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

CHEMICAL MARKETS

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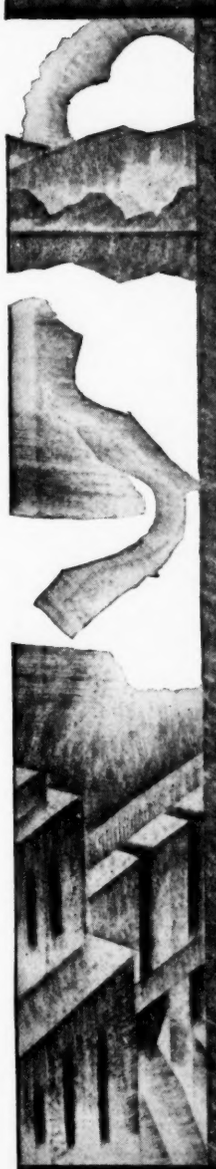
Enable Mathieson To Render Better Service To Industry

By CARL R. MILLER

No. 3 in a series of advertisements describing the position of The Mathieson Alkali Works in the Chemical Industry



ONLY the strongest foundations could have fostered the steady development which has characterized the progress of the Mathieson organization.

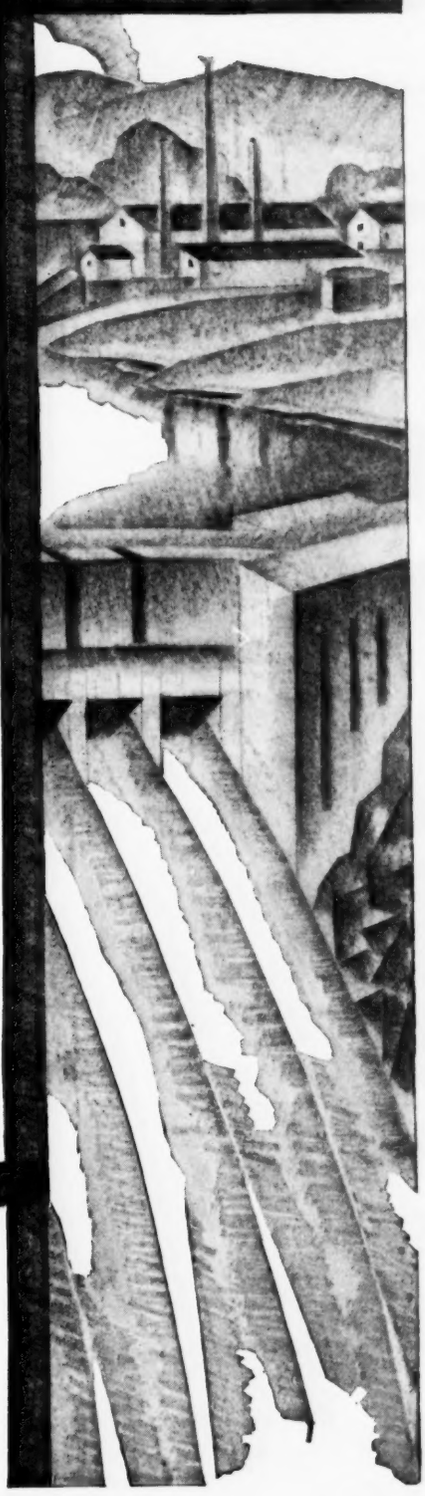
Consistently...year after year...Mathieson has built on bedrock foundations...has built with foresight and efficiency, seasoned with knowledge and experience. Each year new phases of an extensive development program have been introduced...larger plants erected...new products perfected...new processes inaugurated to insure greater manufacturing economies.

This constant development built on Mathieson's strong foundations of Resources, Research and Service guarantees purchasers highest value, uniformity and quality—not only now but in years to come. A list of available literature describing the various uses of Mathieson Chemicals will be gladly sent on request.

The MATHIESON ALKALI WORKS *(Inc.)*
250 PARK AVENUE NEW YORK, N. Y.
Philadelphia — Chicago — Providence — Charlotte — Cincinnati
Works: Niagara Falls, N. Y.—Saltville, Va.
Warehouse Stocks at all Distributing Centers

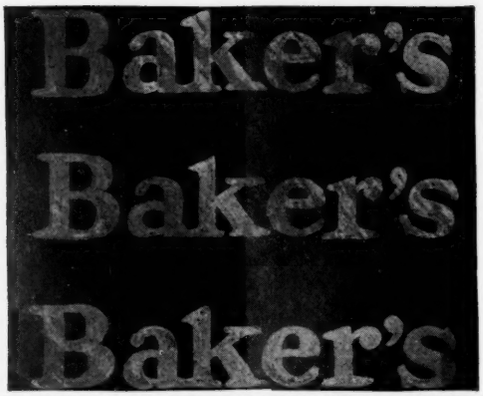
MATHIESON CHEMICALS

Soda Ash . . . Caustic Soda . . . Bicarbonate of Soda . . . Liquid Chlorine . . . HTH (Hypochlorite) . . . Ammonia, Anhydrous and Aqua . . . Bleaching Powder . . . Sulphur Dichloride . . . PURITE (Fused Soda Ash)



Baker's

TIN CRYSTALS* LAST LONGER IN STORAGE



IMPORTANT, because you can make larger purchases at quantity prices. Only a fifth to a tenth the oxidation in storage, because the crystals of Baker's Stannous Chloride (Tin Crystals) are many times larger than others. Larger crystals have less exposed surface, thus they resist oxidation five to ten times longer. VERY IMPORTANT, because well-preserved Tin Crystals dissolve much more readily and save valuable time by giving better results.

Furthermore, Arsenic content is insignificant—usually less than one part in a million.

Their purity and uniformity commend them to the chemical, dye, mirror, metallurgical, sugar and textile industries.

This company is one of the nation's largest, most economical producers of Tin Crystals. Most advanced are its processes. Baker's prices reflect these facts.

Write for samples.

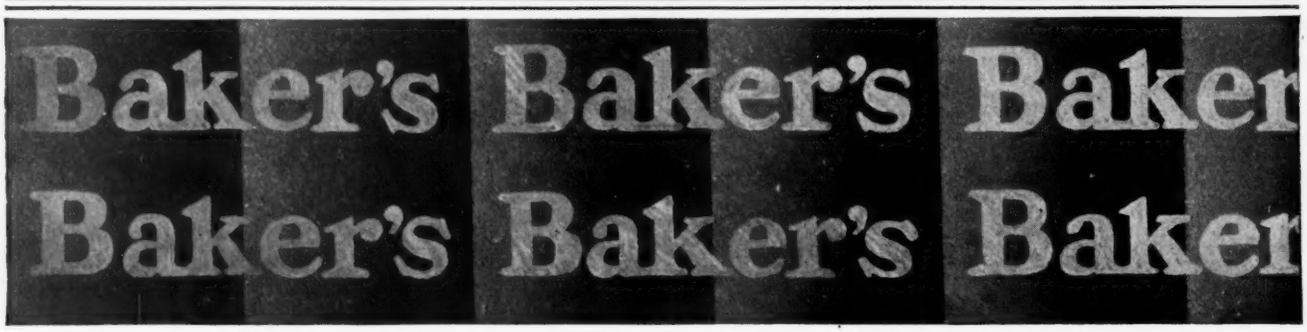
ACID CHROMIC
ACID MOLYBDIC
ACID NITRIC
AMMONIUM BROMIDE
AMMONIUM MOLYBDATE
AMMONIUM PERSULPHATE
CARBON BISULPHIDE
COPPER CHLORIDE
LEAD ACETATE
LEAD NITRATE

Baker's

J. T. BAKER CHEMICAL COMPANY
PHILLIPSBURG, N. J

New York City Sales Office: 420 Lexington Avenue
Chicago Sales Office and Warehouse: 2213 So. La Salle St.
Philadelphia Sales Office: 1713 Sansom St.

LEAD PEROXIDE
MAGNESIUM OXIDE
MERCURIC OXIDE
POTASSIUM BROMIDE
ROCHELLE SALT
SILVER NITRATE
SODIUM BROMIDE
SODIUM MOLYBDATE
SODIUM TUNGSTATE
*TIN CRYSTALS



CUT YOUR SOLVENT COSTS

CONSIDER REPLACING
OTHER SOLVENTS WITH
THE LOWER PRICED PURE

SYNTHETIC METHANOL

We will be glad to cooperate on all problems relating to the use of pure, synthetic Methanol

If you are interested in anti-freeze materials you will be interested in reading this folder on Du Pont Anti-Freeze Methanol . . . the cheap, efficient anti-freeze. A copy will be mailed to you upon request.

DU PONT
REG. U. S. PAT. OFF.

DU PONT AMMONIA CORPORATION

MAIN OFFICE: WILMINGTON, DELAWARE PLANT: BELLE (CHARLESTON), WEST VIRGINIA

The distributing facilities of the General Chemical Company, as well as being nation-wide in scope, are in many instances highly specialized. For tank cars alone, the Company maintains its own repair shops which perpetuate an enviable record of deliveries and safeguard future shipments.

Thus Sulphuric Acid is available in any customary quantity the country over, on practically a moment's notice.

General Chemical Company's Principal Products Include:

Muriatic Acid
Acetic Acid
Nitric Acid
Sodium Sulphide
(Chip Patented)
Glauber's Salt
Sodium Silicate
Disodium Phosphate
Trisodium Phosphate
Sodium Sulphite
Anhydrous Bisulphite Soda
Baker & Adamson Quality
Reagents and Fine Chemicals
C. P. Acids
Insecticides & Fungicides

GENERAL CHEMICAL COMPANY

40 RECTOR ST., NEW YORK

CABLE ADDRESS, LYCURGUS, N.Y.

BUFFALO
CHICAGO
CLEVELAND
PITTSBURGH
PROVIDENCE
DENVER
ST. LOUIS
THE NICHOLS CHEMICAL CO., LTD., MONTREAL
LOS ANGELES
PHILADELPHIA
SAN FRANCISCO

269

New Possibilities in

ACETONE

at its New Low Price

THE recent reduction in price has created a widespread interest in this useful chemical.

Properties of Acetone

Boiling Point: 56.5° C.

Melting Point: —94.9° C.

Flash Point: 1.8° C.

Critical Pressure: 47 atmospheres.

Critical Temperature: 235° C.

Heat of Combustion: 7,373 calories per gram.

Refractive Index: 1.3591 at 20° C.

Surface Tension: 23.7 dynes per centimeter at 20° C.

Electrical Conductivity: 10^{-4} reciprocal ohms at 15° C.

Specific Heat: 0.528 at 20° C.

Dielectric Constant: 20.7 at 17° C.

Acetone is miscible in all proportions with water and with most organic liquids. It acts as a common solvent, or couple, and thus, when added to certain otherwise immiscible liquids, causes the formation of a homogeneous solution.

Acetone is a solvent for many organic materials including: acetylene, asphalt, camphor, cellulose acetate, cellulose nitrate, dyes, fats, grease, gums, inks, resins, tannin extracts, vegetable oils, and wax.

Specifications of Acetone

Purity: 98% to 100% dimethyl ketone.

Specific Gravity: 0.792 to 0.799 at 20° C./ 20° C.

Acidity: Less than 0.002%, calculated as CO_2.

Dryness: No turbidity when one volume of acetone is mixed with 19 volumes of 62° Bè. benzine.

Color: Water-white.

Residue: No weighable residue after evaporation on water-bath.

Water Solubility: Miscible with distilled water in all proportions.

Potassium Permanganate Test: Color of added potassium permanganate retained at least 30 minutes.

Acetone is used in the manufacture of:

ARTIFICIAL LEATHER
ARTIFICIAL SILK
BLENDED FUELS
CELLULOID
CEMENTS
CHLOROFORM
CONFECTION GLAZE
DIACETONE ALCOHOL
ENZYMES
EXPLOSIVES
IODOFORM
ISOPROPYL ALCOHOL
KETENE
LACQUERS
LINIMENTS
MOVING PICTURE FILMS
PAINT AND VARNISH REMOVERS
PERFUMES
PLASTICS
POLISHES
SAFETY GLASS
SYNTHETIC RESINS
SYNTHETIC RUBBER

COMMERCIAL SOLVENTS CORPORATION

SALES OFFICES:

New York Central Bldg., 230 Park Ave., New York, N. Y. Terre Haute, Ind. Aldwych House, Aldwych, W. C. 2, London, Eng.

PLANTS: Terre Haute, Ind., and Peoria, Ill.

Make it Appealing to the Nose too!

Why handicap the sales of your pyroxylin or rubber coated fabrics because of their bad odor?

The simple addition of a small fraction of one percent will give a pleasant re-odorizing effect.

This sales stimulating influence is well worth your immediate investigation.

Laboratory information and samples of Specialized Aromatic Deodorizing Oils on Request

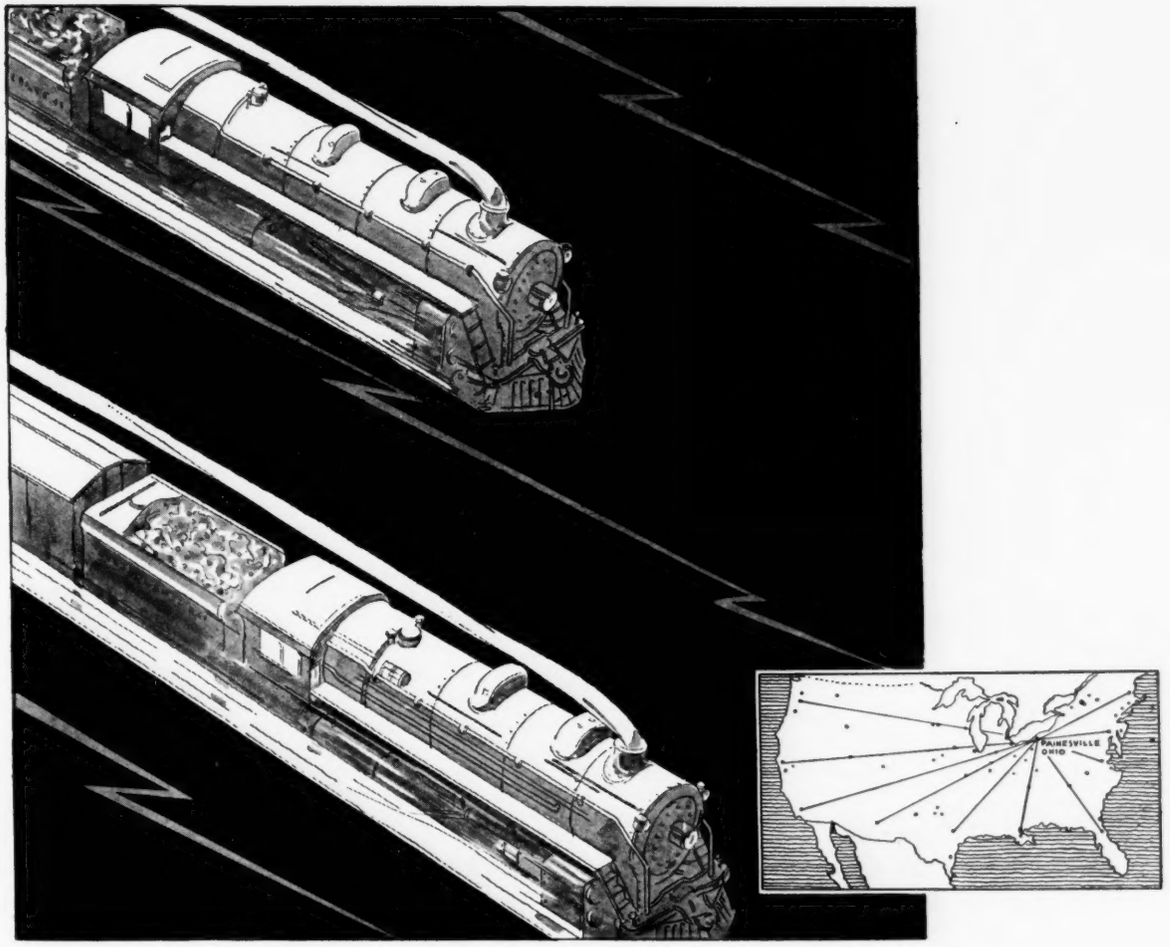
Givaudan-Delawanna, Inc.

80 FIFTH AVENUE NEW YORK, N. Y.

Make SELL By SMELL Your Slogan!

TO MARKET! TO MARKET!

THE DIAMOND PLANT IS IDEALLY LOCATED TO SERVE YOU!



Like a giant spiderweb, Diamond Alkali distribution extends to every industrial center in the United States. Prompt deliveries are assured through the constant activities of our well organized traffic department in checking and tracing shipments.

Served directly by three trunkline railroads, we are able to offer a number of the most advantageous routings on carload shipments, regardless where your plant is located. Less-than-carload lots are immediately available through your local Diamond Distributor.

Do you have your copy of the Diamond Alkali Handbook?—Contains 72 pages of valuable, worthwhile information. Sent free upon request.

ALKALI

Diamond Alkali Company

Pittsburgh, Pa., *and Everywhere*

WITCO

A SUPERIOR MAGNESIA CARBONATE

THE excellence of Witco Magnesia Carbonate is established. This assurance of quality removes any uncertainty of results . . . constitutes a safeguard for the finest production.

This essential quality is put into Witco Magnesia Carbonate with scientific precision. So it is quality that runs dependably true.

There is another profit factor present. It is derived from our position as first hands. The result is economy buying. From every standpoint . . . you gain an advantage from Witco Magnesia Carbonate.

WISHNICK-TUMPEER, Inc.

MANUFACTURERS AND IMPORTERS

CHICAGO • 365 E. ILLINOIS ST. • NEW YORK • 251 FRONT ST. • AKRON • 1101 AKRON SAVINGS & LOAN BLDG. • TRENTON • BOSTON

Witco Owned and Operated:
Century Carbon Co.
and
The Pioneer Asphalt Co.

BUY DIRECT AND PROFIT DIRECTLY

We produce
the fastest
shades

Indanthrens-Naphtols

GDC

General Dyestuff
Corporation
230 Fifth Ave New York

Light 58% Soda Ash Shipped in 100 lb. Paper Bags

WYANDOTTE Soda Ash is now packed in multi-wall paper bags. Multiple layers of special paper end the old dust nuisance---no meshes to let the dust seep through. The smooth paper lining lets the entire contents slide right out.

The new size makes handling easier, quicker, less expensive. You save time, labor. Guaranteed dust-proof, leak-proof, break-proof, moisture-proof.

Michigan Alkali Company is the first Soda Ash manufacturer to successfully use this method of packing Soda Ash.

"Distinguished for its high test and uniform quality"

MICHIGAN ALKALI COMPANY

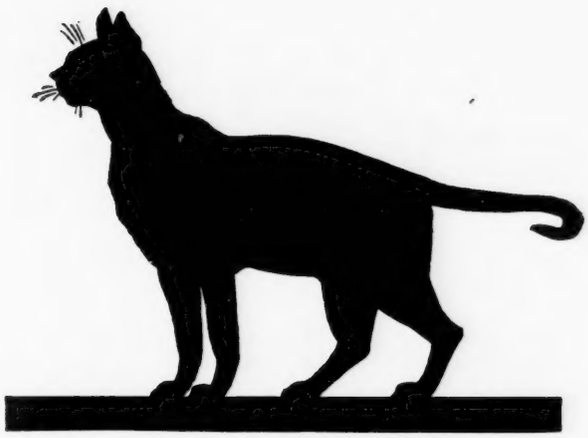
General Sales Department

10 East 40th Street, New York City

CHICAGO OFFICE: 1316 SOUTH CANAL STREET

WORKS: WYANDOTTE, MICHIGAN

NOTE NEW ADDRESS : Our new location in New York is at 10 East 40th Street— just across the street from where we were and a few steps nearer Fifth Avenue



CABOT CARBON BLACK

We have been producing carbon black for nearly fifty years, but the achievements of the past two years have eclipsed all that went before.

In January, 1928, Cabot Certified Carbon Black was first made commercially available. Since that date our shipments have increased 300% while the world's consumption has increased less than 50%.

The exclusive "control test," employed by chemists in each and every Cabot factory, insures buyers a black of uniform volatile content, and a consequent uniformity and improved quality in their own products.

Copy of the pamphlet "*Two Years Experience with Certified Carbon Black*" will be sent on request.

Godfrey L. Cabot, Inc., 940 Old South Building, Boston, Massachusetts

HOOKER CHEMICALS

..of the Highest Quality...

HOOKER HE CO ELECTROCHEMICAL

Every product, every process has originated in or passed thru our Research Department. We are justly proud of this painstaking care in development and production. It guarantees you Hooker Chemicals of the Highest Quality.

With plants conveniently located and our policy of carrying ample stocks of materials on hand at all times, we are prepared to make prompt and efficient deliveries to all sections of the country.

HOOKER CHEMICALS

Caustic Soda
Liquid Chlorine
Bleaching Powder
Muriatic Acid
Monochlorbenzene
Paradichlorbenzene
Benzoate of Soda
Benzoic Acid
Benzoyl Chloride
Benzyl Alcohol
Antimony Trichloride
Ferric Chloride
Sulphur Monochloride
Sulphur Dichloride
Sulphuryl Chloride
Salt

HOOKER ELECTROCHEMICAL CO.

EASTERN
Plant -- Niagara Falls, N. Y.
Sales Office -- 60 East 42nd Street, New York

WESTERN
Plant -- Tacoma, Washington
Sales Office -- Tacoma, Washington

AMPLE FACILITIES ASSURE EXCELLENT SERVICE IN KALBFLEISCH ROSIN SIZE

KALBFLEISCH is exceptionally well organized to give superior service in Rosin Size. We operate four scientifically equipped Rosin Size plants, located with especial reference to the needs of the paper industry.

Shipments of Rosin Size are made direct from these plants in Erie, Pa., Waterbury, Conn., Kalamazoo, Mich., and DeQuincy, La., in tank cars and in drums. The Franklin Tank Line, owned and operated by Kalbfleisch, assures promptness in making shipments.

SYMBOL of QUALITY
KALBFLEISCH
CHEMICALS
FOR OVER A CENTURY

The well planned grouping of plants, and modern shipping facilities under the direction of a trained organization, give vitality and significance to Kalbfleisch service.

KALBFLEISCH CHEMICALS of SERVICE for PAPER

200 FIFTH AVE., NEW YORK, N. Y.

CHATTANOOGA, TENN.
KALAMAZOO, MICH.
WATERBURY, CONN.
DE QUINCY, LA.
ELIZABETH, N. J.

The
KALBFLEISCH
Corporation

ERIE, PA.
JOLIET, ILL.
KOKOMO, IND.
CINCINNATI, OHIO
CAMP VERDE, ARIZ.

By Test or Reputation, the Choice is Harshaw

Buying chemicals is a pretty tough problem in many lines of business. A safe guide is the reputation of the chemical manufacturer. ▲ ▲ Those who choose The Harshaw Chemical Company on the basis of reputation find themselves in company with firms who buy on the strictest kind of laboratory tests. ▲ ▲ Either way, the choice is the same. And either way, we'll justify your choice.

HARSHAW CHEMICALS

THE HARSHAW CHEMICAL COMPANY
"Quality Products Since 1892"
CLEVELAND, OHIO
New York, Philadelphia, Chicago, St. Louis
Stocks also carried in other principal cities

A PARTIAL LIST OF HARSHAW CHEMICALS

Aluminum Oleate
Resinate
Stearate
Ammonium Bifluoride
Antimony Oxide
Antimony Sulphide (needle)
Arsenic
Barium Carbonate
Bone Ash
Cadmium Anodes
Cadmium Carbonate
Cadmium Hydrate
Cadmium Oxide
Cadmium Sulphide
Calcium Linoleate
Calcium Stearate
Carbon Black
Caustic Potash
Caustic Soda
Ceramic Colors
Chromic Acid
Chromium Carbonate
Chromium Chloride
Chromium Oxide
Chromium Sulphate
Clays
Cobalt Driers
Cobalt Linoleate
Cobalt Resinate pp'td. & Fused
Copper Anodes
Copper Linoleate
Copper Oleate
Copper Oxide
Copper Resinate pp'td.
Cream of Tartar
Cryolite
Cyanides
Feldspar
French Ochre
Fluorspar
Glycerine
Galvanizing Salts
Hydrofluoric Acid
Hydrofluosilicic Acid
Iron Oxide
Lead Acetate
Lead Driers
Lead Linoleate
Lead Oleate
Lead Resinate
Lead Stearate
Leukonin
Magnesium Carbonate
Magnesium Oleate
Magnesium Stearate
Manganese Oxide (Black)
Manganese Oxide (Recovered)
Manganese Resinate pp'td. & Fused
Manganese Sulphate
Manganese Borate
Nickel Anodes
Nickel Ammonium Sulphate
Nickel Carbonate
Nickel Chloride
Nickel Oxide
Nickel Sulphate
Oxalic Acid
Palm Oil
Phosphoric Acid
Potassium Bichromate
Potassium Carbonate
Rochelle Salts
Rosin Oils
Sodium Antimonate
Sodium Cyanide
Sodium Fluoride
Sodium Nitrate
Sodium Silico Fluoride
Sodium Stannate
Sodium Uranate
Sulphur
Tri Sodium Phosphate
Di Sodium Phosphate
Talc
Tartaric Acid
Tin Anodes
Tin Chloride Crystals
Tin Oxide
Toning Salts
Uranium Nitrate
Zinc Anodes
Zinc Carbonate
Linoleate
Oleate
Oxide
Resinate
Stearate
Tungate

HARSHAW CHEMICALS

THE HARSHAW CHEMICAL COMPANY
"Quality Products Since 1892"
CLEVELAND, OHIO
New York, Philadelphia, Chicago, St. Louis
Stocks also carried in other principal cities

Barrett Standard

INDUSTRIAL BENZOLS

SOUND reasons explain why so many manufacturers insist upon Barrett Standard—and nothing but Barrett Standard—light oil distillates.

Uniformly high quality. The rigid tests we make both at our producing and distributing points are definite assurance of Barrett Standard quality.

"Rightaway" deliveries. Within a sixty mile radius of fourteen industrial centers speedy Barrett tank-bus deliveries bring Barrett Benzols right to the consumer. No need to slow up production on account of delayed deliveries; no drums to store . . . .

TOLUOL
Industrial Pure

BENZOL
Industrial 90% and
Industrial Pure

XYLOL
Industrial

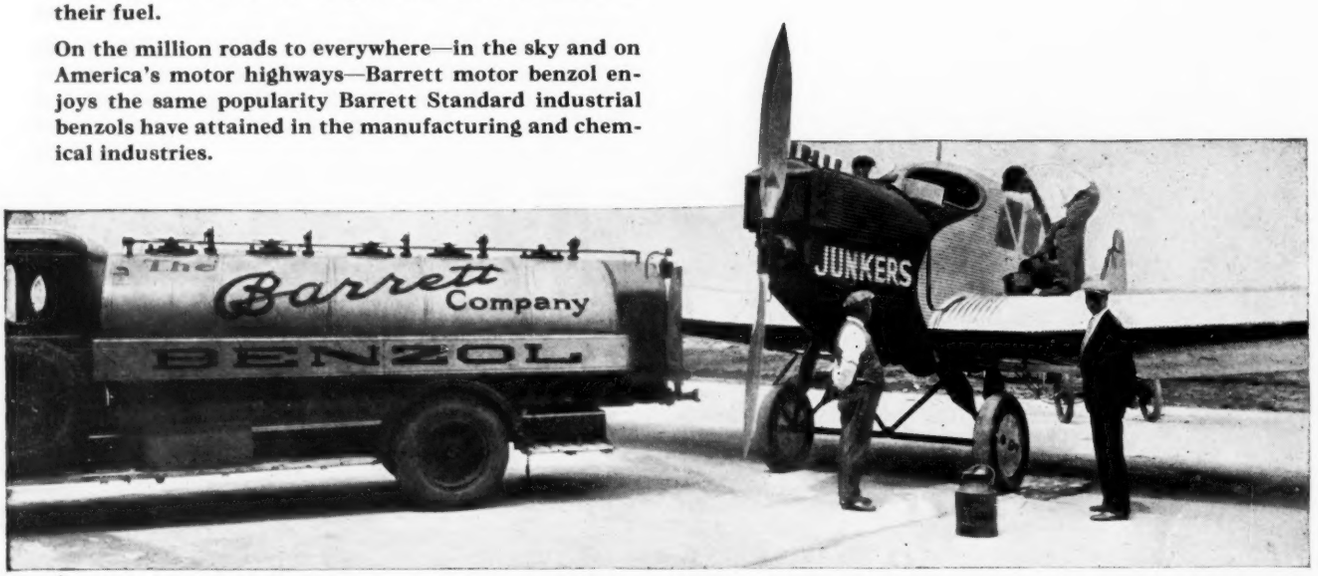
SOLVENT NAPHTHA

GRAF ZEPPELIN

THE YELLOW BIRD THE BREMEN

The Barrett Company

40 Rector Street New York, N. Y.

FLIERS know the value of benzol-blends. All the above transatlantic ships used Barrett Benzol in their fuel.

On the million roads to everywhere—in the sky and on America's motor highways—Barrett motor benzol enjoys the same popularity Barrett Standard industrial benzols have attained in the manufacturing and chemical industries.